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Art. I. *An Historical Sketch of* Neurology. By Frederick G. King, M. D. of New-York.

The history of anatomy, like that of nations, appears in its earliest records so darkly shrouded by the veil of traditionary legends, that borrowing its shape from the medium through which it is seen, it exhibits forms so fantastic, and parts so discrepant, that the inquirer into its truth or origin knows not whence to derive nor how to arrange them.

Lost in contradictory evidence or confused testimony, in furtherance of his design, he calls in the aid of authors who profess to elucidate his subject, and finds that the assistance he had anticipated is to be found upon their title-pages only: at least such is the case with most of the commentators and elucidators of the sixteenth century; who, like the Arabians, content themselves with becoming mere copyists of the great antiques, and oftentimes in so rude a manner, that the force and expression of the original are not to be recognised. To examine this subject then, it is not alone requisite that we look into the historians of the sixteenth century, and then rest satisfied with the testimony there found; but we must ascend to

the earliest records of our profession, if possible, in the languages they first appeared in; for translations too frequently give the favourite views of their author, and not the sense of their original, particularly if they bear date in a century when the passions and enmities of men were keenly sensitive to opposition in any fancied discoveries which self-vanity or ignorance taught them to wish their own, and strive to make others believe as such.

Such has been the case in the history of this branch of anatomy more than in any other, and forms a sufficent reason why, in the consideration of our subject, we shall confine ourselves strictly to the recorded observations of *practical* anatomists, and not indulge in the biassed or false assertions of anatomical philosophers, whose knowledge of man and his structure depended not upon what they had *seen*, but upon what they had *heard*. If such be the rule which guides us, we shall find our subject divide itself naturally into periods; for as practical anatomists appeared but rarely, they gave a tone to the age in which they lived, and stamped a character upon the periods which cannot be better named than after the illustrious individuals who gave remembrance to their times. Hence we arrange our subject under *four* distinct periods, viz.—

I. Neurology from the rise of Hippocrates to the age of Herophilus.

II. From the age of Herophilus to that of Galen.

III. From the age of Galen to that of Vesalius.

IV. From the age of Vesalius to our own times.

I. The condition of Neurology in the period embraced between the rise of Hippocrates and the age of Herophilus.

Previous, however, to entering on this subject, we must first meet an inquiry not unlikely to be made, viz. were there no anatomists previous to this period? To which we reply in the negative, and add that even *in* this period we have no record of any thing like specific anatomy, with the few excep-

tions presently to be recorded. And although the language of the old Testament and Homer every where bespeaks a certain degree of familiarity with our structure—and although it is not to be presumed that priests and others were daily employed in opening victims of sacrifice, and sometimes having even man himself subjected to their examination in the unhallowed slaughter of slaves and prisoners to the manes of departed heroes, without obtaining some knowledge of their structure —yet such hurried and superficial examination could not have been productive of much permanent benefit; and as even records of these observations could not be obtained, and all was oral tradition, such dim and scattered lights could but feebly enlighten the darkness of universal ignorance.

When osteology and splanchnology, the most obvious structures of our frame, were hitherto but little known, surely neurology could not have attracted the least attention. It is therefore with Hippocrates, the most celebrated of the Asclepiadæ, that our history commences; a name which commands respect from the anatomist as well as the physician: for in his works, so long the idol of infallibility, we find much anatomy, though expressed in terms so obscure and confused as to afford scarcely sufficient ground to judge correctly of the extent of his acquisitions in that science. Yet Hippocrates had but slight knowledge of the nerves, or he never would have confounded tendons and ligaments under the general term of nerve: a species of confusion arising from ignorance of structure, always to be met with at this period, and too frequently imitated by his successors to a very late period. Yet although such a fact would seem to argue that nerves had passed unnoticed by him, Galen maintains that Hippocrates had not only remarked them, but had even fixed an express term (τονος) to them, which Galen appears so thoroughly convinced of, that he adopts that very term to express a nerve. But many of the passages* in which that term is

* Lib. de Artic. et. de Morb. Epid. lib. ii. c. 4.

used seem rather to refer to fibres and ligaments than to nerves; but there are passages affording proof that he knew something on our subject: thus we find him* speaking of τα εντος νεῦρα και τα λεπτα, by which we may understand true nerves: and in another place,† he describes nerves as arising from the back of the head, and continuing along the spine of the back as far as the ischium, whence nerves pass off to the thighs and other parts. Had he stopped here it would have been well, and Hippocrates might have been looked upon as the father of neurology as well as of medicine, from his having given an early account of the spinal nerves. But the desire of assigning function to parts led him from this high reputation, and proved to him, as it has to many since his time, an unfortunate veil to the lustre of bright names: for, adds he, "the *uses* of these nerves are to flex the body and extend the extremities," evidently meaning tendons.

But even if he was acquainted with the nerves, he was ignorant of their uses; for he ascribes their function to veins and arteries, and terms apoplexy φλεβῶν απολημψις,‡ and assigns as a cause of aphonia "the interruption of the spirit in the veins,"§ which he says are spread throughout the body, to carry spirit, rheum, and motion,‖ thus assigning what by us is termed nervous energy to the veins or vessels. But his terms are so confused that we cannot know what he really meant, for he at one time speaks of solid veins, and at another of nerves containing blood, which is only explicable on the ground of Rufus of Ephesus, who asserts that the older Greeks frequently applied the term nerve to arteries,¶ so that no argument can be drawn from this against Hippocrates. Whatever then may have been his knowledge of the nerves, he had examined the brain, and is the first who records its membranes. "There are two membranes," says he,** "the

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* Prænot. cos. † De oss. nat. ‡ De oss. nat.

§ Πνευματῶν, απολημψις ανα τας φλεβας.

‖ Πνευμα, ρευμα, και κινησιν. De oss. nat. ¶ Ruf. de art.

** De loc. in hom.

one thick, the other delicate, which cover the brain," which body, from its friability and spongy nature, he considered as a gland;* at one time believed to be "the seat of the understanding and prudence";† whilst in another he places the soul in the left ventricle of the heart.‡ With regard to the long disputed controversy about the true import of ἶς and ἶνες, whether translated nerve, fibre, or ligament, as learnedly contested by Erotian, Foesius, &c. it matters little, for the passages in which it occurs are few and unimportant: and the import of τονος is equally questionable, as will be seen by referring to his two chapters de articulis and de morb. epidem. lib. ii c. 24.

The claims therefore of Hippocrates on neurology are very slight; for although a knowledge of some few trunks of nerves may be allowed, as was not unlikely, considering the numerous wounds and accidents of the times, yet he never distinguishes them from tendons, &c.; and from his assigning their functions to the veins, we may be well assured of his ignorance of their uses. Beside the terms he employs are so loose and questionable, and are backed by reasons so contradictory, as not to be admitted in satisfactory proof of any great familiarity with our subject. And indeed we should not have been so particular on this point, had not Galen, by the deservedly great weight of his authority, given a bias towards the belief that Hippocrates was familiar with true nerves; but the passages referred to, with several others that might be adduced, will not support such a construction or bear us out in such a belief. Yet the hints thrown out, and above all, his description of the brain and its membranes deserve remembrance, inasmuch as it is the first step towards those investigations which were shortly to be made in this system. In fact all the names which will attract our attention in this era, are remarkable only as they contribute each a little towards the foundation of the rising system.

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* De gland. † De morb. sac.

‡ De corde, which, by the by, is a questionable chapter, as also the one de gland.

Therefore we shall pass over Thessalius and Draco, the sons of Hippocrates, and Polybius, his son-in-law, together with many others who, however distinguished in other respects, cannot challenge the attention as having thrown any light upon the object of our researches. Moreover for a long time after Hippocrates, anatomy became the almost exclusive property of the philosophers, in whose hands, as was to have been expected, it became adorned with fanciful and oftentimes brilliant theories, founded on so much of structure as was then known, without being enlarged by dissection or anatomical investigations. It was not for minds educated in the dialectics of the schools, or skilled in sophistical philosophy, to submit to the drudgery of minute dissection; but overleaping such disgusting minutiæ, they seized on striking or peculiar facts, and wove them into a brilliant tissue of philosophical hypothesis, as is beautifully illustrated in the writings of Plato, Zeno, and others.

But in this strange confusion of anatomy and philosophy we find, what could little have been anticipated, a truly sterling work in minute anatomy, by that most accurate of observers, Aristotle, whose treatise on animals will long endure as the monument of an enlightened monarch's patronage, and a grateful philosopher's return.

Aristotle, the disciple of Plato, is indeed the very first who can with propriety be termed an anatomist or dissector, and is the father of that art, without which anatomy is vain, and medicine foolishness, viz. anatomical demonstrations. To such an extent did he push his anatomical investigations, that we are not astonished at finding it maintained* that he had dissected *men*, although many of his descriptions disprove such assertions, and he himself states,† "that human anatomy was unknown, and judged of only from analogy in other animals." Be this as it may, he certainly added but little to the doctrine or explanation of the nerves; for like Hippocrates he

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* Goelicke. anat. hist. p. 47. † Animal. hist. lib. i. c. 16

confounds them with tendons, and also with muscular fibre, placing their origin in the heart, which he says is filled with nervous fibres running in every direction,* evidently meaning the tendinous threads or muscular fibres of that organ, which, like his successor Praxagoras, he esteemed as being the seat of the soul, and the common source of sentiment and motion. Having heaped these honours on the heart, it is not astonishing to find him despising the brain, as a mere *cold* mass of earth and water, devoid of blood, and utterly destitute of sentiment, which two last propositions are dependent on each other, and rest upon a belief he elsewhere promulgates,† that only such parts as have blood can possess sentiment or sensation.

The only use he assigns the brain is to keep the heart cool, a function which he likewise attributes to the lungs; but the mode by which this refrigerating process is carried on is unfortunately not detailed, else we might have been gratified with a specimen of physiology as amusing as the detail is singular. Yet this same author maintains that the medulla spinalis is an entirely different structure from the brain; and being *warm*, consequently enjoys a more distinguished office, viz. to nourish the bones of the spine.

He endeavours to draw a line of distinction between nerves and ligaments, hitherto so frequently confounded: for we find him expressly maintaining,‡ "that the vital spirits cannot be contained in the nerves," and he certainly proves his point, as reasoning apart, we cannot fail to believe, when we find that his nerves, like those of Hippocrates, serve to move parts, and are nothing less than tendons; which fact tends strongly to prove the assertion of Rufus, "that the ancients understood vessels by the term nerve," as is further established by an assertion of Aristotle,§ "that the vessel called aorta is *nervous*,

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* De part. anim. lib. iii. c. 4.

† Ibid.

‡ De spiritu.

§ Hist. anim. lib. iii.

and in its extremities resembles a true nerve,* having no cavities, and being expanded like such about the articulations of bones," clearly indicating by the latter clause of the sentence that by true nerves he understood tendons. Excepting that he confirms the statement of Hippocrates, with regard to the two membranes of the brain, Aristotle could claim little attention from us: yet was his career a splendid one, as is best evinced by the despotic sway his writings maintained, even in the sixteenth century, in three departments of letters, viz. metaphysics, natural history, and anatomy.

With regard to his successor Glaucias, (crucified for the unsuccessful treatment of a case,) Alexippus, Critodemus, &c. nothing is left but their names, and a few trifling anecdotes.

The taste or inclination for examining the structure of animals appears to have sunk with Aristotle; for no improvements or additions were made, until that second Hippocrates, as he was called by the Athenians,† Diocles Carysthinus appeared, who, though at one time‡ treated lightly of by Galen, is nevertheless commended§ as the first who wrote an express treatise on methods of dissection. But how or why Diocles attained his lofty title from the Athenians it is difficult to say, for he was little more than a remodeller of old theories, and in his dissections has added nothing to anatomy: we should not have mentioned him, except that he was the first after Aristotle to return to actual observation of anatomical structure, thus leading the way to discovery and improvement.

About the same period, or a little after, Praxagoras appeared, the third from Hippocrates who excited much attention, and received encomiums as a skilful anatomist; but that he knew not much of nerves, we are convinced, from his affirming

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* By a true nerve, here, is meant a ligament or tendon, and by nerve, an artery or vessel is to be understood: the ambiguity of expression arises from similarity of terms in the original, and the meaning is to be received according to the knowledge of those times and not of our own.

† Theod. Priscian. ‡ De dissec. mat.

§ De admin. anat. lib. i.

with Aristotle, that they arose from the heart,* and that the brain is of no use; though he differs from the latter in considering it as an *appendage* of the spinal marrow, a doctrine which has lately been urged as a discovery of modern date. He however advances a singular doctrine, which is perhaps referable to the passage we have noticed from Aristotle,† viz. "that arteries change to nerves in proportion as their cavity is contracted towards their extremities;"‡ and yet the author of this singular belief was the preceptor of Herophilus.

With Praxagoras our first period closes, leaving us very nearly in as much ignorance of neurology as it found us at its commencement. For the discovery of the two coverings of the brain, some wild conjectures as to the use of that organ, together with a few singular notions about nervous communication and influence, comprise the amount of the knowledge for which we are indebted to this period. But curiosity had been awakened, and the attention of men called to the elucidation of structure by actual observation, from the few hints and facts thrown out in the records of this age; and we may safely pronounce, but for the occasional dissections in this period, and the diverse and opposite opinions and facts stated by their observers, our science would not have been prosecuted with such zeal, attention, and talent, as in our next period we shall find it to have been.

II.

Having thus, for a series of years groped on in darkness, obscured by ridiculous conjecture, and entangled by slight and contradictory observations, neurology is now about to extricate herself from minds that would not observe, and hands that could not trace her mysteries, and assume the high rank to which it is doubly entitled from her long obscurity and her

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* Ruf. lib. i. c. 33. 36.—Galen de Hip.

† Gal. sur le systême nerveux, &c.

‡ Galen de Hip. dec. lib. i.

essential utility. Indignant at having offered her beauties to the blinded eyes and bigoted minds of Greeks, more habituated to the modes of logic than to the instruments of dissection, she fled their country for a more happy climate, where arts, science, and literature held their abode, on the banks of the seven-mouthed river.

In Egypt, whose monarchs led the way in anatomy,* as appears from the testimony concerning Athotis; whose very feasts contributed to its advancement, by the dreadful memento mori which presided over them,† where none other than human anatomy could well be studied, as they were forbidden under penalties the most severe from slaying, or if found dead, from dissecting dogs, and all unclean animals; whilst by another law, all virgins furitively pregnant were compelled to kill and expose their offspring on the highway, affording no scanty field for anatomical improvement;‡ and where an affection for the living, strengthened by a peculiar religious belief, extended into love for the dead, inspired them with a desire to render the frail body ever-during as the semblance of forms once esteemed, anatomy, not of beasts, but of man, was rendered essential and easy. And when we add to this that Ptolemy Soter annually devoted the bodies of a certain number of criminals for dissection, we cannot wonder that this science abandoned Greece, and enshrined herself in Alexandria, where she met with faithful priests, and numerous sacrifices.

Under such favourable circumstances was it that Herophilus of Chalcedon, on the Bosphorus, with a most princely patron, rose to immortality in the crowded schools of Alexandria. By virtue of the most laborious examinations and toilsome research, he soon became pre-eminent among his associates and cotemporaries, Erasistratus excepted, in anatomical knowledge. Daily observing parts unknown before, he felt the

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* Eusebius.

† Plut. Symp.

‡ Goelicke. hist. anat. p. 22.

necessity of terms to express them, and therefore engaged in the arduous task of forming an anatomical nomenclature, furnishing what it had not before, a language to anatomy. Its highest praise is, that it has stood the test of time unimpaired, for most of his terms are at present in use, though the honour of their invention has been assumed by later writers.

He first entered the unexplored region of neurology, and marked out paths which even moderns have scarcely passed along. He is the father of our system, for this pursuit could by no means claim the name of science until enriched by him, whom Celsus* and Tertullian† stigmatize with the name of butcher, and abuse on the ground of having dissected men *alive*, in the same manner as Medea is fabled to have boiled them alive, from her having been the first to introduce the use of the warm bath.‡ Thus has Herophilus suffered the indignation of certain learned fathers and prejudiced dogmatists, because he first dissected men. For although Riolan and others attempt to prove that Hippocrates, Apollonius, Aristotle &c. did really dissect men, yet their proofs are too feeble to be admitted. Thus with regard to Hippocrates, the strongest argument they urge is drawn from Pausanias, who states that it is *reported* " that at Delphi there is a brazen skeleton consecrated to Apollo by Hippocrates ;" which however proves nothing : for allowing the *report* to have been correct, which is questionable, does it require that Hippocrates should have been a dissector of men in order to design such a statue ? In the hurry of military movements, were the dead or wounded never left to blanch the field of glory with their bones ? Has the surge only in modern times cast forth its dead upon the shores ? Homer records such facts, why then cry a miracle to prevent it during the period of Hippocrates ? And if such things were, surely it required no great anatomical knowledge in Hippocrates to produce a model for this reported skeleton. And no argument which probability can advance

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* Præf.

† Unum esse spiritum, xc.

‡ Le Clerc.

shall persuade us that Aristotle had dissected men when we have his own declaration to the contrary.* Galen too, in speaking of Herophilus, says,† "he was a man versed in all that concerns medicine, particularly skilled in anatomy, which he had learnt, not from the dissection of animals as *his predecessors had done*, but principally from the examination of men."

This question then, which has led us somewhat astray, being set at rest, we cannot but conclude that Herophilus and Erasistratus are the first known to have dissected men. Were other arguments wanting, they might be found in numerous passages of the above authors, where their anatomical descriptions accord with the structure of animals, but do not apply to man. Thus far we have thought it necessary to wander, inasmuch as the history of these men is interwoven with our subject, and we could not omit so important a feature of it as the above, which contributes strongly to account for the reason why their predecessors knew so little, and they so much of human anatomy. We shall now return and investigate the claims of Herophilus as the first practical anatomist, and the discoverer of the nervous system.

Dissatisfied with the looseness of anatomical research existing heretofore in Alexandria, Herophilus made use of his deservedly acquired influence over his prince Ptolemy Soter, for the purpose of obtaining his permission to make those examinations on man himself, which elder anatomists had been compelled to prosecute in animals. Accordingly we find that he is the first who observed the true nerves, or such portions of our fabric as are indicated at the present day by this term; for he draws that necessary distinction, hitherto unnoticed, between nerves and tendons, the confounding of which had led so many of his predecessors astray, and which nothing but complete ignorance can excuse many of his successors for again reverting to.

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* Animal. hist. lib. i. † De diss. c. 5.

The accuracy of his dissections, and his familiarity with the functions of parts, cannot be more clearly indicated than by a reference to the grounds on which he made his distinction, as related by Rufus,* " dixit autem Herophilus aliquos esse nervos qui a cerebro spinalique medulla oriuntur; aliquos qui ab osse in os inseruntur; aliquos a musculo in musculum transeuntes qui articulos etiam copulant." So accurate was his knowledge of true nerves, that an application of terms in common use at this day with regard to them originated with him. Thus, speaking of nerves, he says, " Germina a cerebro enascentia nervi sensorii electorique sunt per quos sensus et voluntaria motio fit, omnisque corporis actio perficitur."† In this description we find a distinction made which could not have been expected: for he uses the term *voluntary* motion, as applied to particular nerves, implying a distinctive idea of two kinds of motion, dependent on different sources or agents. But his knowledge was not confined to cerebral nerves as appears from the following passage from Rufus, in speaking of the description of Herophilus, " horum autem nervorum quidam a spinali medulla et ex ipsam cingente membrana expullulant."‡ So that the spinal nerves were not discoveries of modern date.

Thus well informed about the nerves, he next examines the brain whence he derived them all: and here we again find him making rapid discoveries. Not content with Aristotle's description of its two membranes, he examined them for himself, and soon perceived the imperfection of his predecessor's account. He describes them anew together with the *processes* and *sinuses* of the dura mater, with a precise description of his own Ληνος,§ or wine press, a sinus known to this day as the Torcular Herophili. The supposed cavity of the optic nerve did not escape his attention, and he remarks that these nerves have a cavity,‖ an opinion universally entertained until

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* De Apellat. corp. hum. part. lib. ii. c. 17.

† Ruf. lib. i. c. 22.

‡ Idem.

§ Galen de anat. admin. c. 9.

‖ Ruf. lib. iii. c. 17.

Vieussens contradicted it, saying, "quum ne visorium quidem nervum unquam cavum perforatumque viderim qui a dissectionum professoribus forati dicantur:"* and this opinion has not wanted advocates in our time, although the appearances favouring this deception have been satisfactorily accounted for on other principles.†

The surface of the brain, and the discoveries he there made, were not enough to satisfy a mind like his, when the acquisition of every new fact enkindled a desire for more; and he sought them in the very recesses of the brain, by the opening of which he discovered and remarked the ventricles,‡ so that it may be truly remarked of his searching knife, "ex aperto cerebro, obstetricantibus etiam Vulcani ferramentis Minervam enatam fuisse:"§ particularly as he believed the lateral ventricles to be the seat of the soul.‖ Nor is it to be supposed that in opening these singular portions of the brain, whose use is still a problem in physiology, that the most apparent of their contents, the plexus choroides (so called from its resemblance to the vascular membrane of the fœtus¶) could have escaped his scrutinizing eye; and it is in fact to Herophilus that we owe, not only the discovery, but also the name of this vascular tissue.

The retina or expansion of the optic nerve did not escape him in his observations on the eye;** a circumstance truly wonderful, when we consider the extreme delicacy and nicety of manipulation, as well as fineness of instruments at the present time requisite for its perfect display. Not content with the mere discovery of these varied parts, and the lacteals not among the least, he endeavours to account for their functions: and to the nerves, as we have already seen, he ascribes the motive power and the faculty of sensation.††

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* Vieuss. p. 317.
† Pring. on nerv. syst.
‡ Ruf. lib. i. c. 22.
§ Wills. dedicat.
‖ Le Clerc p. 320.
¶ Ruf. c. 22.
** Ruf. c. 23.
†† Galen de anat. ed. c. iii.

There is still a discovery of his unmentioned, which will scarcely be credited, the more especially as the honour of it has been assumed by Aranze,* in the sixteenth century: yet Galen and Rufus both testify to the fact, that not only was the fourth ventricle discovered by Herophilus, but that he also noticed that peculiar arrangement at its base, known to us by the name of calamus scriptorius, a translation of the very name he himself gave in describing the part, "which," says he, "resembles a pen cut for writing." (Αναγλυφὴ τῦ καλάμῦ.)†

If such be the claims of Herophilus on our attention, as collected from fragments and notices of him scattered here and there in various authors, how much may we not reasonably suppose might have been detected had his writings not been lost during the twelfth century, until which time they were extant?

Such was Herophilus, the founder of our system. Each discovery seemed but the prelude to others far more brilliant, nor confined exclusively to neurology; for every part of our system became in turn the object of his investigations, and every part received numerous additions from him: so that we feel disposed rather to join with, than smile at, Fallopius, when we find him bursting out in the enthusiastic encomium, "contradicere Herophilo in anatomicis est contradicere Evangelium."

After so splendid an era it may from analogy be presumed that our History is again to be lost in the clouds of rising ignorance and neglect: not so however, the spirit of investigation was abroad, roused to action by the success of Herophilus. The same age and school boast the names of Herophilus and Erasistratus; which last, though placed by some anterior to Herophilus, was probably in repute about the same time or a little after.‡

Far more fortunate than his predecessor, Erasistratus speaks for himself on the subject of the brain and nerves: for Galen

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* Spreng. hist. anat.

† Galen de anat. ad.

‡ Le Clerc.

has preserved nearly the entire passage which we cannot do better than translate, as affording information wonderfully precise for that period on this subject. "We examined the brain of man to ascertain its nature, and we found it divided into two parts, as in other animals, having ventricles or long cavities: these ventricles *communicate* with each other, and run towards the cerebellum, (παρενκεφαλον) where is also a small cavity (the fourth ventricle.) But each part was separated by its membranes, and the cerebellum particularly, was enclosed by itself, as also the cerebrum, which last in its folds and convolutions resembles the jejunum. The cerebellum also is folded and turned in such a variety of ways, that it is easy to perceive that as tendons and muscles are remarked as aptly disposed for swiftness of motion in deer, &c. so also in man, who exceeds all other animals in intellect, this great variety and multiplicity in the folds of the brain has been made for a particular end. In addition to which he remarks "that the nervous productions or apophyses of the brain are so striking, as to convince us that this organ is the principle of all actions which occur in the body. For the sense of smell arises from the nostrils being pierced to allow of communication with the nerves; hearing is produced by a similar communication of nerves with the ear; and the tongue and eyes are supplied with similar productions of the brain."* In this remarkable passage we find Erasistratus dividing the cerebrum into hemispheres, and the whole encephalon also into two parts, cerebrum and cerebellum, demonstrating the existence of ventricles, and maintaining an opinion with regard to their communication which is still received by many, strong proof to the contrary notwithstanding. He goes farther, for he may be ranked as the first of phrenologists, from the clause in the above fragment, where he suggests the idea, that in proportion to the multiplicity of folds and convolutions in the brain, will the intellect be more or less developed; illustrating

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* Galen, de Hip. et Plat. plac. lib. iii. c. 7.

his proposition by an apt and familiar analogy. But we shall not urge his claims particularly on this latter head, for there is too much comprised in the above quotation to permit us to dwell on a solitary fact. The facts here recorded could not have been believed, so much like a modern's does his description appear, had we not the authority of Galen for their authenticity.

We cannot then, under these circumstances, question the accuracy of Rufus, when he tells us that Erasistratus distinguished two kinds of nerves: the one for sensation, the other for motion:* and according to the same authority he maintained that the origin of the two was distinct, for those of motion arose from the brain collectively, whilst those of sensation, which were hollow, took their rise from the meninges or membranes: but Galen† says, that although this was his original belief, yet having grown older and examined more thoroughly, he concluded that all nerves arise either from the brain generally, or from the spinal marrow. So far too was he acquainted with the functions of the parts he had so well observed, that he ascribes paralysis to "an interruption of the humour which nourishes the nerves,"‡ which, with a slight alteration of terms, might well pass for a passage from some modern treatise, so clear is the decided reference to the nerves as the cause of this affection, as laid down by one who is well termed by Macrobius,§ "veterum medicorum famosissimus et nobilissimus."

As to Eudemus, who is celebrated by Galen "quod nervorum originem rectius antecessoribus suis cognoverit," and who was the able assistant of Herophilus and Erasistratus, many of whose discoveries in this branch he has the honour of sharing; unfortunately justice cannot be done to him, for his writings have perished, and his memory is alone preserved by a few scattered fragments in Galen.

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* Ruf. lib. i. c. 22. & lib. ii. c. 17.

† De Hip. et Plat. plac. lib. 7.

‡ Galen de artr. bil.

§ Saturn. lib. ult.

We have now reached that period when medicine, hitherto with all its dependencies exercised by one and the same man, was to be divided into distinct branches. But it would be irrelevant to trace the rise and progress of diatetic, pharmaceutic, and chirurgic medicine; it is enough to remark that we have the authority of Celsus* for placing this division of the profession at the period immediately subsequent to Herophilus.

How much soever such a division of pursuits might, under ordinary circumstances, have contributed to the individual advancement of each, it was at this period more than counterbalanced by the appearance of that sect, who little convinced by the reason of medical philosophers, and incredulous as to the discoveries of the anatomist, maintained that neither the one nor the other were necessary, and openly proclaimed *experience* as the only guide in medicine. Serapion† and Philinus were the leaders, or rather founders of this sect, whose principles, although extended by some to six, are nevertheless easily reducible to three heads, viz. observation, history, and substitution, which form, according to the favourite doctrine of numbers, the "tripod of medicine,"§ as Glaucias, one of this sect, terms it.

In opposition to these contemners of anatomy, the *dogmatists* arose, who maintained that all remedies must be exhibited according to *indication*, which implied a knowledge of the apparent and latent causes of disease, of structure, and familiarity with functions, which were not to be attained without examination and dissection. They indeed admitted that experience was useful, but maintained that it must primarily be founded on reason; and urged the appearance of

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* Præf.

† Serapion primus omnium nihil hanc rationalem disciplinam pertinere ad medicam professus in usu tantum et experimentis eam posuit. (Celsus. præf.)

‡ Le Clerc.

§ Τριπους της ἰατρικης.

new diseases as a reply to their opponents; for as experience could not exist in such a case, a knowledge of natural and morbid anatomy, acquaintance with the laws of function and the different causes deranging it, are the only means left to direct remedial applications in such an emergency.

But enough of this controversy, which may be all summed up in a few words, viz. "Analogy and induction were to the empiric what the connexion of dogmas and methodical application of them to plans of cure were to the dogmatist."*

With regard to the subdivisions into methodics, and these again into epysinthetics, eclectics, and pneumatics, they are foreign to our subject. For indeed the two leading sects had not been mentioned, but that in the uninterrupted acrimony of their contests, some reason might be found why anatomy, so flourishing under Herophilus and Erasistratus, should again have fallen into disrepute, and become almost forgotten.

Aretæus of Cappadocia, who after a lapse of centuries is the next to claim our attention, though an excellent physician, and fully aware of the importance of anatomy, as is apparent from his prefacing all his treatises on disease with a rapid anatomical sketch of the parts, was not of particular benefit to our science in the extension of discovery, although from close observation he has been led to some curious, and perhaps not wholly incorrect views of some part of nervous structure, as will presently appear. With Aristotle he again seats the soul in the heart; although he believed the brain to be the principle of motion and sentiment, with the nerves dependent on it. But he in part redeems his reputation by the excellent anatomical remarks made in his chapter on paralysis, where he not only states what has been by many esteemed a modern doctrine, viz. decussation of nervous fibres, but also gives strong reasons for placing that decussation in a definite part, at least he lessens the part through which it is to be sought. Thus, in speaking of paralysis from injury, he says, "when it arises from injury to the spinal chord or parts *below*

* Cabanis.

the head, similar sides are affected: i. e. if the injury be on the right, the right side will be paralytic, and vice versa, but if the injury be inflicted *on* the head, opposite sides will be affected;"* which he accounts for thus, " because nerves arising on the right side do not go direct to parts on the right side of the body, but immediately at their origin they pass over to the *opposite* side, crossing each other like the letter X, (ἀλλήλοισι ἐπαλλαξάμενα εἰς χιασμὸν σχήματος. With the statement of this opinion, founded on the most accurate observation of morbid phenomena, and the remark that he every where speaks of nerves, of sensation, and of motion, as distinct, we leave Aretæus, to pass through crowds of pharmacopolists, botanists, physicians, and philosophers, who for succeeding centuries fill the pages of medical history.

Anatomy was lost amidst such diversity of pursuits, and might have perished but for the research, skill, and genius of a single man; for down to as late a period as the reign of Trajan, nothing more was noticed of anatomy. But Rufus of Ephesus then appeared to change the scene, and once more place neurology in its proper light. Although it might be inferred from a passage in his writings,† that animals were his only subjects, yet few, who had more ample field of examination, and man himself subjected to their view, have left as much information for us. Agreeing with his predecessors, in ascribing two coverings to the brain, " altior crassior, robustiorque ossi proxima, quæ *pulsatorio* motu cietur; tenuior altera et ferma quidem;"‡ he also mentions the cerebrum and cerebellum, and describes their relative situations,§ and follows Herophilus too closely to allow the ventricles or plexus choroides to escape him. The spinal chord is also

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* Ην μεν οὖν της κεφαλῆς κάτω πάθη, τις ἀρχὴ, οκοιον τι τε νεωτιαις μενελξ ἡ μηνιξ, τὰ ὁμώνυμα και ξυναφέα παραλυεται, δεξιὰ επι δεξιοισι, ϰ ἐπ' αριστεροισι λαιά. Ην δε κατάρχη κεφαλὴ, επι μεντοισι δεξιοισι, τα λαια παραλυεται, δεξια δε επαριστεροισι. Aret. c. 7.

* Lib. i. c. 2. † Lib. i. c. 22.

‡ Idem.

accurately described as passing through the foramen magnum and along the vertebræ, even to their termination, adding, " neque propria tamen cerebri substantia est sed emanatio."* He also is the first to remark that the brain, " proque corporis mole large majus est in homini quam in cæteris animantibus reperitur :"* how this remark could have been made, and yet man not have been dissected by him, we cannot state, unless it be, as is probable, that the first passage alluded to is addressed to students, as animals were most easily procured, and man less frequently, though occasionally presented to them. He also proceeds further to remark on the distribution of nerves to the eye, ear, nose, &c.: and not content with this, he adds a concise definition of a nerve,† and continues with a remark little expected and scarcely credible, was it not backed by a fact of much greater importance, which places in a strong light the immense benefit a single man may be to a science, provided that man possesses the faculty of observation conjoined to good sense and invention.

Thus Rufus says of nerves, " obtusi dum inciduntur sensus :" placing in strong light the conclusion that sensation is dependent on these organs: but the " greatest is behind," viz. the annunciation of a fact which the moderns have assumed the credit of having first observed. We shall close the history of this anatomist and our second era, with the following rapid sketch of the *recurrents !* which it appears had been recently observed, but by whom cannot be ascertained. Thus in speaking of the carotid arteries we find this passage, " Cavas autem per collum subeuntes carotidas id est somniferos antiqui nominaverunt, quoniam compressæ hominum sopore gravabant *vocemque adimebant* : cæterum nostro sæculo *non* arteriarum sed *nervorum* sensoriorum prope jacentium id vitium esse compertum est."‡

Thus with a notice of recurrents and the fact that pressure upon them prevents the utterance of voice, concludes our

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* Lib. ii. c. 2. † Lib. ii. c. 18. ‡ Lib. i. c. 24.

second period: and in conformity with our design we should now commence with that splendid era, in which Galen collected all the scattered lights of antiquity into one strong focus, and whose splendour is increased by the brilliancy of his own inimitable descriptions: but other engagements will not allow us at present to continue this interesting inquiry, which at some future time it is our purpose to resume.

ART. II. *Observations on* BRONCHOCELE *or* GOITRE. By ALEXANDER COVENTRY, M. D. President of the Medical Society of the State of New-York.

To the Editors of the New-York Medical and Physical Journal.

GENTLEMEN,

Agreably to my promise I beg leave to submit to you some observations on Goitre. Although much has been written on this disease both in Europe and America, yet its cause seems still involved in mystery; and all that has hitherto appeared on the subject amounts only to conjectures and surmises. Having had some opportunity of making personal observations, I will take the liberty of stating them, with the hope of exciting to further investigation on this yet obscure subject.

In travelling up the Mohawk valley in 1792, I first met with goitre among the German settlers; and being informed that some of the early emigrants had come from the Swiss cantons, I at once concluded that it was an hereditary disease, imported by their ancestors from the Alpine valleys, but I have long since been convinced that this conclusion, like many others too hastily formed by travellers, was without foundation. Almost every American who speaks of bronchocele, refers to the vicinity of old fort Schuyler, on the Mohawk river. This proves the habit that writers are in of copying each other, no such place being known for nearly thirty years past. The village of Utica now occupies the scite of the former fort, and if there is a single case of goitre among a population of four thousand souls, it is unknown to me. Dr. Bar-

ton, formerly of Philadelphia, in his memoir, and I believe President Dwight, late of New-Haven, speak of a family near old Fort Schuyler as instances of goitre. It is now above twenty years since this family removed from land which I now occupy: and to prevent repetition, I will attempt a short topographical description of the vicinity near Utica.

The Mohawk river occupies the bottom of a valley, which from the summit of one ridge to the other may be seven or eight miles in extent. Utica is in lat. 43° 06′, lon. 75° 13′, about ninety-six miles west from Albany. The bottom of the valley is perhaps 370 feet above tide water, and neither ridge exceeds seven hundred in elevation above the river. On the south ridge, which I suspect is the most elevated, are found quarries of various species of rock from which stones for building are supplied. The beds of the small streams which flow into the south side of the Mohawk, are composed of hard gravel, excellent for repairing roads, &c. On the north side of the Mohawk river, immediately opposite Utica, a flat of clayey alluvion, sufficiently tenacious for the formation of brick, extends nearly a mile, and is joined at its northern edge by a tract of gravelly or sandy loam. After an ascent of 25 or 30 feet this last mentioned tract spreads with nearly a level surface for about three quarters of a mile northerly, where it joins the foot of the ridge. This seems to join the hill, and the alluvion may be called a secondary intervale; from the north edge of this, the ridge rises with a gradual ascent for about two miles, and to an elevation of about 600 feet. At the foot of the ridge wherever a small stream flows, the schist is seen in horizontal layers of a soft friable texture, and when exposed to the air slacks into shelly matter, and soon becomes a black crust. This rock approaches the surface on the south side of the ridge, and on the top is found within a few feet, forming the bottoms of cellars, and obstructing the digging of wells. In fact, the body of the ridge on the north side of the valley at this place is a schistus or slate rock, and differs from the south ridge, in having no other rock superincumbent. All the streams entering the Mohawk on the north side, at this place,

run on a bed of shelly slate gravel, which is useless for roads, as it crumbles into an impalpable black dust. In a south-east direction from Utica, about seven or eight miles distant, and behind the north ridge (as seen from the valley) a small stream arises, which, after running several miles with a west course, turns southerly, cuts through the ridge, and winding along the low lands, enters the river a few rods below the bridge at Utica. Although in the summer months all the water of this stream would frequently run through a tube of four inches diameter, yet it has cut down the north ridge to its centre, having removed an immense quantity of the schist, forming a vast hollow, which in the vicinity is called *par excellence* the great gulf. At places the level flat surface of the rock is exposed for one hundred feet in perpendicular height; the stream of course runs on a bottom of slate rock till it reaches the secondary intervale, from which part to its mouth the bed consists of the slaty gravel before mentioned. On the bank of this stream, where the secondary intervale joins the clayey alluvion, stood the house of Mr. Regel, and the brook still goes by the name of Regel's creek.

In the spring of 1798 I settled near Mr. Regel, on the west side of the stream, and within thirty or forty rods of his house, but on the secondary intervale, and considerably higher than his location. Regel's family consisted of himself, wife, four sons, and one daughter, all of adult age, and with one exception, troubled with bronchocele. The old man had an enormous goitre reaching from ear to ear, and hanging down on his breast. His respiration was considerably impeded so that I have heard his breathing at fifteen or twenty rods distance. He resided in this place previous to the revolutionary war, during which he was carried off by the Indians: his goitre was then about the size of a doubled fist, but disappeared entirely while he was a captive in Canada, where he was detained two years. On his return the swelling appeared again, and had gradually attained its greatest size. This man had no other ailment and seemed about sixty years of age. His wife had also a large goitre about half the size of her hus-

band's: three sons had moderately sized swelled necks, the daughter rather larger: the latter had passed a fortnight at Saratoga springs, during which her goitre had by measurement decreased one half. The fourth son, named Frederick, had no signs of goitre. I cannot now ascertain whether he had been brought up at his father's house or not: when I became acquainted with him he resided at a distance of three quarters of a mile, at the foot of the hill, by a pure and beautiful spring, the water of which he used.

There being no well, the rest of the family used the water of the creek spoken of, for all culinary and other purposes. Prepossessed with an idea of the hereditary nature of the disease, I also used the brook water, when towards the approach of the winter, to my no small mortification and vexation, I perceived a considerable goitrous enlargement in the neck of my wife, and an evident thickening in the necks of my two daughters. Then I first began to suspect the water of Regel's creek. The next summer I sunk a well about thirty feet through a gravelly sand, at the bottom of which a quicksand obliged me to sink a curb. The well-water is very fine; and since we commenced the use of it none of my family has been subject to goitre. Regel's family removed to the county of Onandago, and I have been informed recovered from the goitrous swellings: even the old man is said to have got rid of his before death, but this I can scarcely credit.

A few years after this I leased a small house standing near the brook, to a Mr. Walworth, who had a son about twelve years old. This lad in the course of a few months exhibited appearance of bronchocele: he was sent from home, and his neck returned to its natural size; but in the succeeding season began again to enlarge, and the family moved away.

About the autumn of 1802 I put a small flock of sheep into a pasture through which the stream ran: next spring one lamb proved goitrous: the succeeding season every lamb had a swelled neck, and seven out of eight died. On opening the gland, nothing was perceivable but an enlargement. My next neighbour had sheep in an adjoining pasture, which was wa-

tered by a spring: his sheep had no distemper. My flock has been kept where they do not get to the creek water, and are now free from the disease.

With these facts before me it was not unreasonable to suspect that the water of the stream had a tendency to affect the thyroid gland. I have to regret that no analysis has yet been made of it, but hope in the course of the summer this defect may be supplied: meantime I am tempted to hazard a conjecture as to the material with which it may be impregnated. We know that the schist is not soluble in water, but readily acted upon by the air, with the oxygen of which it seems to have great affinity. This is observable in a dry season, when the surface of the schist will be covered with a white florescence, which on examination is found to be alum. Near Glasgow, in Scotland, a very extensive alum work is carried on, the material for which is found in the schist rock which forms the side, bottom, and roof of an exhausted coal pit. In this situation the slate exposed to a current of air, but protected from the rain, combines with the oxygen, and in process of time forms sulphate of alumine, from which, I believe, the sulphuric acid is procured.

The crystalization formed on the schist rock, is washed down into the stream by the first rain, and must impregnate the stream with alum: but whether or not this solution would affect the gland, or in what manner, we are not able to say.

Professor Gibson, in a learned essay on goitre, thinks that the enlargement takes place from the obstruction of the small ducts leading from the gland and opening into the trachea. I esteem this a very probable supposition, and it would in some measure account for the effect of an astringent substance.

In conversation with Mr. P. the gentleman who first settled as a merchant at old Fort Schuyler, he informed me that he found several German families residing on the south side of the river, but none of them had goitres. It will be recollected the streams on this side have gravelly bottoms; and although the schist is also found here, and probably underlays the whole valley, it is here overlaid by rock of a different texture. Be-

sides those of the Regel family, there were some other cases of goitre formerly found along the north side of the river: these were, I believe, uniformly in families residing near a run which came from the north ridge. I know of no young person who has a goitre, neither do I recollect a house but what has a well. A gentleman, who resided many years on the river, says that twenty-five years ago bronchocele was frequently seen in his neighbourhood, but is now very rare, and only seen in elderly people: in these instances he can recollect the family lived near some small stream with a slate or slate-gravel bottom: he also observed that wells were much more common than formerly. May not the gradual disappearance of the disease at Pittsburgh be owing to a similar cause?

This disease is found in Switzerland, not on the high mountains or lowest valleys, but in the middle regions, where the ridges are cut deep. I am not sufficiently acquainted with the geology of the Alps, to know what species of rock occupies these regions; but judging from analogy, I suspect it would be schist, which is often found to underlay granite and those hard species of rock which form the tops of mountains: but this is all conjecture, and my chief aim is to invite further investigation.

Since the discovery by Doct. Coindet of the powerful effects of iodine in curing this disease, little need be said on that part of the subject. My daughters were cured by wearing the muriate of soda (culinary salt) round their necks, by which means I have since cured several. I have removed them by mercurial plasters: repeated blistering, and the Saratoga waters will also be found efficacious. As to cicuta curing goitre, I suspect it is only the extract prepared by Ducatel that could do much in that way: indeed I have no great opinion of the powers of cicuta. I have now in possession a statement from a respectable lady, who took three hundred and ten grains in five hours, for tic douloureux, without benefit; this to be sure was not prepared by Ducatel, but procured from one of the most respectable physicians in Boston. I have another case before me, where a man took three quarters of a pound

of extract in three days, in large doses; it caused some stupor, but did not cure the neuralgia: he said that the extract was fresh and good. But this is what the lawyers would call irrelevant, as the iodine will supersede the using of any other remedy for bronchocele.

Most respectfully yours,

A. C.

Utica, State of New-York.

ART. III. AN *Account of Circumstances connected with the appearance of the* YELLOW FEVER *at the Island of Ascension in May* 1823; *communicated in a Letter to* DAVID HOSACK, M. D., F. R. S., &c. of New-York, by JOHN THOMPSON, Surgeon of the Royal Navy, and Medical Officer of the British Garrison at Ascension.

AT the request of Captain Sabine, I beg leave to submit to your notice some circumstances connected with the malignant yellow fever, which prevailed at the Island of Ascension in May last; by which it will appear pretty evident that this disease, if not always, is under particular circumstances highly contagious. It may be proper to premise that I have held the situation of medical officer to two several garrisons on this island for the space of two years and seven months, and that I never saw a case of true idiopathic fever until the above period. Its medical topography presents nothing to which we could possibly refer the production of this epidemic. The soil is of a dry and barren quality, composed of mouldered pumice and volcanic ashes, so very porous that the effect of the heaviest falls of rain disappears in a few hours. These circumstances being unfavourable to vegetation, there is therefore very little herbage. Purslane is the only vegetable production that appears capable of existing in so poor a medium, and even that remains in a withered state great part of the year, springing into life after a fall of rain of some continuance. There was also every attention paid, not only to the

cleanliness of the people, but also to their localities: the remains of turtle and other animal substances were carefully picked up and thrown into the sea. Hence you will perceive that we could not call in the usual assignable causes to account for this malady: in fact they were not necessary.

On the 25th of April his majesty's ship Bann arrived there from Sierra Leone with forty-five men suffering under this disease, all of whom were on the same day landed, and placed under tents erected about three hundred and fifty yards from the nearest place of residence of our establishment: the communication was interdicted as far as regarded our people and the sick; it could not be cut off entirely with the ship, as there was a mutual dependence on each other's resources, by which it was necessarily maintained. On the 11th of May, being sixteen days after their arrival, a boy, twelve years of age, who was in the habit of passing twice a day by the sick tents to a fowl-house situated a little way beyond them, became affected with a disease exhibiting the same character and symptoms as that which prevailed among the Bann's people; such as great lassitude and debility, coldness and shivering, followed by great heat of skin, severe pain across the forehead, in the back, loins, and calves of the legs, a remarkable fulness and tinged state of the eyes, with a sense of pain on pressure, and an intolerance of light; pulse full and very quick, bowels costive, tongue covered with a whitish mucus, but at a more advanced period it assumed a dark brown or blackish hue in the centre, whilst the edges were of a florid red; thirst very urgent. On these symptoms supervened marks of inflammatory action in the stomach and æsophagus, with great gastric irritability, which could not be subdued by any means in our power. The vomiting in some cases being incessant, with singultus, the fluid ejected presented the appearance of port wine dregs; in a few instances, towards the latter stage of the disease, it became somewhat thicker in its consistence, and darker, resembling coffee grounds. The head also suffered considerably in this malady. Although, on the whole, the gastric symptoms were the most predominant, coma and

delirium were sometimes present, with restlessness, anxiety, frequent sighing, palpitation of the heart, with a general nervous tremor in every part of the frame.

The skin, more or less early in the disease, invariably assumed a yellowish tinge, varying in the depth of its hue in different cases: there were no petechiæ or glandular swellings; a hemorrhage from the mouth and nose did occur in a few cases.

As soon as we were thus convinced of the contagious nature of this fever, orders were immediately issued to the people of the garrison, forbidding them to enter the house to which the boy belonged: but notwithstanding these orders were strictly attended to, a female residing a hundred yards from thence became ill two days afterwards, and in less than a month every individual above six years of age was visited by this inexorable malady. There was a small post established about four miles and a half off, upon which the principal garrison was dependent for its supply of water, thus rendering a frequent communication unavoidable. The consequence was, that the morbid poison by which this disease was propagated was, by some means or other, conveyed thither, and applied to the person of an individual who would not otherwise have contracted it, as he had not visited head quarters for some time prior to the arrival of the Bann, and five days only had elapsed from the time the boy was attacked until it was manifested in this instance. From this circumstance, and from the confident knowledge I have that the boy had no intercourse with the sick in the tents, it does not appear to be absolutely necessary to the reproduction of this disease, that the individual who becomes the object of its attack should have previously been in immediate contact, or even in direct communication, with those labouring under it. The atmosphere seemed to have become contaminated and infectious, otherwise I do not see how we are to account for this fever appearing in a family at a considerable distance from that wherein it originally showed itself, and between whom there existed no communication whatever. It is no less evident that the noxious poison

which is thus wafted in the air attached itself to the persons, or impregnated the clothes of those people who were employed between the two posts, who necessarily must have conveyed it, but it is somewhat remarkable that none of them had the fever for the first three weeks of its existence on shore, that is, among those of the garrison.

At its commencement it appeared to single out those who were more particularly predisposed to disease, either from debility, bad habit of body, or irregularity in living. This was very much the case with the two first attacked; the boy was very sickly, and of a scrofulous habit; the other, though a young man, had ruined his constitution by dissipation.

There are various opinions respecting the source of this disease in the Bann; and I am unable to determine whether its origin is attributable to the endemical causes which are said so frequently to produce it on the coast of Africa, or whether it depended, as some have alleged, on the influence of contagion derived from a vessel called the Caroline, with which she held communication; or further, whether it had acquired this quality from the accumulation of so many sick in a necessarily confined situation, under a tropical sun, where, notwithstanding the best means are adopted, ventillation must be imperfect. It certainly did not appear on board whilst lying at Sierra Leone, nor until she had been four or five days at sea on her passage to Ascension. There was nothing observable in the state of the weather that could be regarded as likely to produce such a malady, and the proper state of discipline maintained in the ship precluded the possibility of its arising from a want of cleanliness. It however carried off before she reached the island, viz. in twenty days, fifteen out of about a hundred men: during her stay of five weeks, she lost twenty more, making thirty-five. The garrison sustained a still greater loss in comparison to their number: of thirty men who were exposed to the focus of contagion, fourteen died, and only one escaped unattacked. The disease appeared in its more severe form in young people, and particularly if of a full and plethoric habit: as this was the case

with the greater number of those attached to the island, they consequently suffered more considerably. Besides the above thirty we had five men employed at the gardens situated near the summit of a high mountain in the centre of the island. Four of these never left the post during the sickness, the other was necessarily employed twice a week in bringing vegetables to head quarters: during these visits he was not permitted to have any communication with the people of the garrison, nor was he allowed to approach nearer than a station given him about fifty yards to windward of their dwellings, his stay seldom exceeding ten minutes. In consequence of these precautions (which could not be adopted in regard to those from the water service,) this man did not contract the fever, nor did he convey it amongst those with whom he resided.

ART. IV. ON *the* YELLOW FEVER *which recently prevailed at the Island of Ascension in May* 1823. Communicated to the Editors by DAVID HOSACK, M. D., Prof. &c.

To the Editors of the New-York Medical and Physical Journal.

GENTLEMEN,

I HAVE recently been favoured by Captain Sabine of the Royal Navy, and by Sir Gilbert Blane, F. R. S. with certain communications on the Yellow Fever as it prevailed at the island of ascension: these I enclose you for publication in your Journal. I cannot but think that you will agree with me that the facts embraced in these papers are of a nature that ought to be extensively known. The communication of Sir Gilbert is one of the number of the documents forwarded to the British board of admiralty: that by Mr. Thompson is from the pen of an able and enlightened surgeon.*

Very respectfully yours,

DAVID HOSACK.

Drs. FRANCIS and BECK.

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* See Article III. of this number.

Letter of Sir Gilbert Blane on the Yellow Fever at the Island of Ascension.

Sackville-street, London, December 15th, 1823.

SIR,—Be pleased to acquaint the Lords Commissioners of the Admiralty, that in virtue of their Lordships' directions, I have been furnished by the Commissioners of Victualling with such documents as have come to their hands regarding the appearance and fatal effects of the yellow fever at the Island of Ascension; and I have procured further information of the Paymaster of Marines. I have also been favoured through the politeness of Dr. Burnet, one of the Medical Commissioners of the Victualling Board, with the sight of a private letter to him from the commander of the Bann sloop of war, from which I have derived important information on the same subject.

The result of all these sources of information is, that from the time the fever showed itself on board his Majesty's sloop of war Bann, a few days after her departure from Sierra Leone, on one of the last days of March last, the crew at that time being all in perfect health, till her arrival at Ascension on the 25th of April, there died thirteen men, and twenty between that time and the 2d of June, when the epidemic was supposed to have ceased: and that by a report, dated the 5th of August, there died of the garrison, among whom the disease broke out a few days after the arrival of the ship, sixteen men, five women, and four children; besides one child, stated in the report to have perished for want of sustenace after the mother's death.

In order to estimate the rate of sickness and mortality in the crew of the Bann, it is necessary to state that there were mustered on board of her,* on the 31st of March, one hundred and seven men and officers, being only three short of complement;

* These facts are taken from the Muster-books deposited at the Navy-office.

besides twenty-nine supernumeraries, native Africans. It appears that no death occurred among the Africans, so that nearly one third of the ship's company was carried off by this disease. It appears by the Surgeon's journal, that ninety-nine had been seized with it; and I was informed by the paymaster of marines, that it appeared from his correspondence, that of the twenty-eight men and officers first stationed at Ascension, in September 1821, there died none; nor was there even a single case of sickness among them from that time till May 1823, a few days after the arrival of the Bann. During this time the garrison was neither increased or diminished. But the rate of mortality is not to be computed on the number of twenty-eight, for there were six men at a distant post to whom this disease did not extend; so that out of twenty-two there died sixteen, that is, somewhat more than three-fourths.

Two men belonging to his Majesty's ship Driver also died at the island, of this disease. The death of Capt. Saumarez, of the Bann, which happened subsequently to the above report, being added to these, the total loss of lives, amounts to the number of sixty-two, including the child.

As this garrison was quite healthy at the time of the arrival of the Bann, there can be no doubt of the disease being contagious; and the medical officers, upon whose conviction of its not being so the commanding officers omitted to take any effectual means of cutting off intercourse between the ship and the garrison, have since, in their official communication, explicitly declared their change of opinion. At the same time, they described the disorder as possessing the true characteristics of the yellow fever, in that aggravated and infectious form, in which it has shown itself in the West Indies and North America and Spain. The detailed account, given by the surgeon of the Bann, leaves not the least ambiguity regarding its nature; for, among other symptoms, he enumerated "the skin tinged with yellow, assuming a deeper and deeper hue;" and, "before death, the vomiting of a dark-coloured fluid like coffee grounds:" these are characteristics which will apply to no other epidemic.

Without entering into any detailed history of this disease, far less of the controversy regarding it, it may be satisfactory to their Lordships to be informed, that the first account of it on record in the British Colonies in the West Indies, is that of Barbadoes, in 1647, and in North America, that of 1693, at Boston, to which it was carried from Martinique, by the fleet under Admiral Wheeler. In Europe, its first appearance was at Lisbon, in 1723. From these periods it continued to make its appearance in all these regions, but at long intervals, particularly in North America and Europe. But in 1792, a new era of its prevalence commenced, for since that time it has been infinitely more frequent and fatal in the West Indies and North America. This increased prevalence did not commence in Europe till the year 1800, when it appeared at Cadiz in all its horrors, after an interval of thirty-six years. Since that time it has visited this place four times, and has spread from thence to other sea-port towns in the south of Spain, at short intervals. Among other places in this line of coast, it has visited Gibraltar; first, in the year 1804, when more than one-third of the garrison and population were carried off, and several times since, but with little loss, on account of the preventive means adopted, means which had been wholly neglected at the first visitation.

It is remarkable that this pestilential epidemic has never shown itself except in tropical climates, or at those seasons, in temperate climates, in which the heat ascends to the tropical height. This has, perhaps, been one of the chief causes of the disbelief of its infectious nature. But not to mention the establishment of it, by evidence, as a matter of fact, it may be remarked, that in this respect it bears a close analogy to the true plague, which has never been known to exist but under one particular range of atmospheric heat, though lower than that of the yellow fever; for it is only in temperate climates that it has ever prevailed, having never been known between the tropics or within the polar circles. It even disappears in temperate climates during the solstitial heats, which equal the tropical, as is well known in Lower

Egypt; and in the north of Europe it becomes extinct in winter.

Another cause of the incredulity regarding this fact, is the great resemblance it bears to that form of the yellow fever which is at all times more or less endemic in the West India islands. This, in ordinary circumstances, is not contagious, but becomes so when it is engendered and fostered by corrupted human effluvia, under those circumstances of foul air occasionally created by crowding, filth, long privations, hardships, and defective ventilation, more particularly incident to ships and to times of war. It is under such concurrence of incidents that this fever takes on a more intense virulence and a contagious character, whereby it propagates and spreads itself n the manner of a pestilential epidemic.

What I wish most anxiously to press on their Lordship's attention is, that a great proportion of the medical officers of the navy, like the two alluded to (before what they witnessed at Ascension,) are said actually to disbelieve in the contagious nature of this fever in any of its species, forms, or circumstances.

Their Lordships will readily apprehend, from what has happened on this small scale, what must have been the effect of this opinion, if erroneous, held by those whose duty it is to suggest the necessary precautions in the case of the fleets, armies, garrisons, and great towns, which have been exposed to this malady for the last thirty years, on the continent and in the islands of America; and for the last twenty-three years, in the south of Europe; and what must in future be the effects of this singular delusion, should it continue to prevail, and be acted upon as heretofore, in his Majesty's service by sea and land.

Deeply penetrated with these sentiments, I feel myself irresistibly called upon humbly to submit to their Lordships, whether some steps might not be taken, under their authority, for promulgating these and similar truths, with a view to enlighten and guide naval officers, military, and medical, in the exercise of this part of their duty, so that such a cautious

system of conduct may be adopted as may prevent the recurrence of the like calamitous and tragical events in all time to come. I am inclined to believe that, as the greater part of the medical officers of the navy, as well as the army, are now well educated, and of a highly respectable character, it is from a want of due information that this fatal error has prevailed so much; for there are already on record many facts, as strongly in evidence of the contagious nature of the yellow fever as those that have so recently occurred at the island of Ascension, which, were they generally known, could hardly fail to carry conviction to every rational mind. Of this kind might be quoted the various instances of the communication of this disease from one ship to another in the middle of the ocean. It is obvious that any one of these facts, duly attested, would, by all the laws of evidence, be sufficient to substantiate the proof of this point, so as to decide the question; and the force of so many could not fail to prove irrisistible, were they generally known.

In apology for this long address to their Lordships, I take leave to plead that, besides the great importance of the subject, it has been my lot, for the last forty-four years, to have either been engaged in actual employment in the medical service of the navy, and occasionally in that of the army, or, in the absence of such employment, to have devoted an almost unceasing attention to such studies; and I have felt none of my duties more imperious than that of inculcating, to the best of my judgment, a just manner of thinking on the subject of infection in general, and particularly that of the desolating malady now in question. I trust, therefore, that my earnestness on this subject will not appear to their Lordships in the light of an improper and officious interference, proceeding, as it does, from a person not in actual employment. I feel, further, that what I now do is not unbecoming of me in the character of first Physician to our Sovereign, and as an act of gratitude and duty for those rewards and tokens of approbation which I now have the happiness to enjoy from his Majesty personally, as well as from the state; not to mention

that call upon every well-disposed person to take a serious interest in matters which involve the fate of so many human beings, and of so many of his fellow-subjects of the most valuable class.

I have the honour to be,

SIR,

Your most obedient humble Servant,

(Signed) GILBERT BLANE.

To JOHN WILSON CROKER, Esq.
Secretary to the Admiralty.

P.S.—My fear of trespassing on their Lordships' time and attention having induced me to make my statements in as few words as possible, I have perhaps done wrong in omitting some important circumstances which I shall here advert to as briefly as possible. A few days before the Bann sailed from Sierra Leone, the captain sent some of his men on board of a merchant ship called the Caroline, to assist in bringing her to an anchor. This ship had lost by the yellow fever almost all her hands, to the number of twenty, none having survived but the master and two others. There was also, at that time, an unprecedented loss of lives from the same fever among the white inhabitants of the settlement. It is described, in the reports made to the Medical Board of the Army, with a sight of which I was favoured, as a fever widely different from the ordinary fever of the country, both in its symptoms and in its degree of malignity; such, indeed, as had never before been known in that colony, and as occurring at a season of the year which is usually the most healthy. It is also worthy of remark, that his Majesty's sloop of war the Driver, which had lain at Sierra Leone at the same time with the Bann, arrived at Ascension with all the crew in health; and that I found, by inquiry of the master of the Caroline, that none of the ship's company of the Driver had been on board of his ship, nor had any intercourse taken place between the two ships after the breaking out of the fever. Some of the men of the Driver, he said, had been on board of his ship, but this happened many days before the sickness had commenced.—G. B.

Art. V. On *the Misapplication of* Blisters. By Thomas A. Duffy, M. D. of New-York.

It might naturally be expected, from the every-day application of blisters, that nothing new could be offered on the subject; but experience convinces me that no class of remedies is so frequently misused. In the opinions which I shall offer, I am aware that I am opposed by the ordinary practice of the present time; if, however, established principles can be brought forward to prove the solidity of the subsequent assertions, there can be no reasonable objections to the reform proposed.

It is an acknowledged fact in medicine, that two excitements cannot well exist at the same time in the constitution: it is partly upon this principle that blisters are employed. Now, in a highly irritated state of the system, where the vascular excitement is great, any thing which may have a tendency to increase that state must be decidedly improper and injurious. Any thing which does not possess a force more than commensurate with the existing excitement, cannot, according to the aforementioned principle, exert any influence on the reduction of it. If these conclusions be correct, I think it can be clearly proved that blisters, in the way that they are generally used, frequently are the cause of much confusion to the practitioner and mischief to the patient.

In the majority of inflammatory diseases, blisters are applied immediately, without reference to the stage of the disease, or habit of the patient; and we know that there are some individuals, who are of so sensitive a nature, that the slightest irritant will produce very great general derangement: it is also a fact, that in inflammations of important parts there is always great constitutional excitement; and there is no other means of relieving this, but by a removal of the cause. If, therefore, it be admitted, that for the removal of a diseased action, it requires something which by lessening it relieves it; or by an action peculiar to itself, causes a new excitement, sufficient to overcome the one existing: it only remains to be

proved that blisters cannot produce this change in the commencement of inflammatory diseases, and the argument will be conclusive. It is the general practice of this time in inflammatory diseases of an active nature, first to abstract a quantity of blood, (and that generally not too large,) to purge, and then to have immediate recourse to a blister. Now, however correct this practice may be in a few instances, every practitioner who pursues it, must have observed, that most generally at his return to the patient, the force and frequency of the pulse are increased, the heat and dryness of the skin greater, and indeed all the symptoms aggravated.

How is this increase of excitement to be accounted for? Depletory measures have been used so as to reduce the frequency and force of the pulse: surely these means would never have augmented the action, for their tendency is directly opposite. What then must be the cause? Nothing else but the premature application of a blister, before the symptoms of violent excitement had subsided. In pneumonia typhoides, for instance, where the application of blisters is peculiarly useful, the too early employment of them is generally attended with the most fatal effects. We are sent for to see an individual labouring under this disease: according to the customary practice, the patient is made to lose a small quantity of blood, he is purged, and a blister applied immediately over the seat of the disease: mark the sequel. The physician at his return finds the action increased tenfold: if he follow the rules of practice, he must bleed again; he does so without referring to what might have produced the renewed action; and by treating the combined effects of the excitement produced by the blister and that caused by the disease, he either kills the patient, or else leaves him in that state of debility, from which it will be almost impossible to recover him. We will even suppose that the physician is perfectly aware of what produced the increased action, and that he abstains from bleeding; nevertheless, the violent excitement caused by the premature application of the blister prevents the operation of medicines which otherwise would have acted

beneficially, and causes an earlier supervention of the typhoid symptoms. I would not be understood to say that blisters are of no use in inflammatory diseases: on the contrary, I think, that under certain circumstances and in certain stages, there are no remedies upon which we can place so much confidence. Where, for example, the patient is naturally of an irritable habit, and is at the same time labouring under a disease of excitement, the employment of blisters until that excitement is in a great measure reduced, can upon no principle be justified. But in the passive stage of the disease, where the vessels are labouring under debility from strong previous action, blisters are particularly useful, not only by the local stimulus they exert, but by producing increased general excitement, and enabling the system to overcome the diseased action. Thus blisters, when properly employed, become not only remedies of great local importance, but produce a happy effect upon the constitution, which never could have been obtained under any other circumstances. In the commencement of simple inflammatory fevers, blisters are equally inadmissible, from the tendency of those diseases to run into the typhoid form: when, however, the excitement is somewhat subdued, blisters, by causing a new, general, and healthy action, effectually put a stop to the complaint. During the time of my practice in the West Indies, I observed that early blistering always aggravated the disease, by producing an increase of the febrile action and delirium: but when a different form of treatment was adopted, viz. first to lessen the excitement by the usual means indicated, and then to apply blisters, the success was certain in the generality of cases. If the principles which have been advanced are correct, it follows, that the plan of treatment in phlogistic diseases should be, first to reduce the increased action, by means of bloodletting, cathartics, &c. and then to employ blisters; for nothing in these diseases, short of a diminution of the quantity and force of the circulating mass, will produce a sufficient impression on the system; the subsequent application of blisters can then be

attended with no bad effect: but their whole tendency will be to produce a new action, and must benefit the patient.

These remarks concerning the impropriety of applying blisters in the active stage of local inflammation are applicable in an especial manner, in my opinion, to the treatment of the yellow fever of the West Indies. In this form of febrile irritation, the liver is acknowledged by all to be primarily affected. Under such circumstances blisters, had recourse to before the use of the lancet, have been known to add to the excitement of the system, and to aggravate the gastric irritation. When, however, the physician shall have been duly efficient in the use of antiphlogistic remedies, the counter irritation produced by blisters are among our best means of relief.

ART. VI. CASES *of* AMENORRHŒA *successfully treated by Injections of Aqua Ammoniæ.* By JOHN W. GLONINGER, M. D. Pennsylvania.

CASE I.

Mrs. C—— R——, aged about thirty-two years, in the month of July 1822, contracted a quotidian intermittent, and in consequence became affected with a suppression of the catamenia. The fever was removed, after resisting other medicinal agents, by the use of prussiate of iron. Previously to my advice having been solicited, a variety of family remedies had ineffectually been tried for the removal of the uterine obstruction. Her health was much impaired, her feet and legs œdematous; she complained of great oppression at the chest, vertigo, pains in the back part of the head, in the lumbar and hypogastric regions, loss of appetite, and had had a slight pulmonary hemorrhage, which I viewed as vicarious to the menstrual discharge. Considering the pulse in a favourable condition for emmenagogues, I placed her successively under the use of rubia tinctorum, polygala senega, tinc-

tura melampodii, tinctura lyttæ, sulphate of iron, aloetic and mercurial preparations, without in the least experiencing any benefit from any of them. Having in preceding cases of amenorrhœa seen good effects from the use of the tincture of gum guaiacum, prepared agreeably to the formula, and exhibited according to the directions of Dr. Dewees, when other emmenagogues had proved unsuccessful, I had recourse to it in this case, but after a steady perseverance with it for a considerable time, I was mortified to find, that the feelings it had created, portending an irruption of the catamenia, and the expectations formed of its use, were equally delusive. In the beginning of February last I availed myself of M. Lavagna's mode of treating amenorrhœa by the use of an injection per vaginam of aqua ammonia and warm milk, in the proportion of ten drops of the former to an ounce of the latter. The injection was exhibited four times a day for eighteen days, at the expiration of which period the menses appeared.

CASE II.

Mrs. M—— E——, aged twenty-four, had the menses suppressed in consequence of getting her feet wet last summer, while she was very warm from exercise: since then she has been indisposed with the symptoms commonly attendant on amenorrhœa, such as loss of appetite, nausea, constipation, fetid breath, vertigo, erratic pains in different parts of the body, &c. A great variety of domestic remedies having unsuccessfully been used, I was consulted on the 29th of November last. The pulse was full and tense, her habit was plethoric, and as the pain in the head and at the umbilicus was severe, I abstracted about twelve ounces of blood, ordered cups to be applied to the forehead, and administered a dose of ipecacuanha and calomel, with the view of cleansing the primæ viæ. After using the ordinary emmenagogues for some time without affording any relief, I strongly advised a trial of the injection per vaginam of the aqua ammonia and warm milk, to the use of which she at first objected; but through the intercession of some of her friends, a submission

to the proposed treatment was obtained. Accordingly the injection was directed to be used in the same manner as in the preceding case, and the effects produced by it were equally gratifying; for in the course of two weeks the menses appeared, and have since regularly returned.

ART. VII. OBSERVATIONS *and* FACTS *concerning the* SIREN LACERTINA *of Georgia and Carolina; in a letter to* GEORGE BOND READ, *M. D. President of the Medical Society of Georgia, &c. dated May* 28, 1824. By SAMUEL L. MITCHILL, M. D. LL. D. Professor of Materia Medica in the College of Physicians and Surgeons of New-York.

[Read before the Lit. and Phil. Soc. of N. Y., 13th May, 1824.]

AFTER several dissections of Sirens two years ago, the arrival of five more, three living in their native mud, and two dead ones preserved in spirits, from my friend Henry T. Farmer, M. D. of Charleston, South Carolina, has enabled me to examine for myself their structure and manners more particularly than I had ever an opportunity to do before.

It might seem that a subject which had been agitated for half a century, concerning the double set of respiratory organs, gills and lungs, ascribed to this reptile, ought to have been definitely settled long ago. After a long and serious controversy, it is remarkable that the most correct of the modern opinions, coincides substantially with that of Garden, Ellis, and Linnæus, the earliest observers, that there is a twofold apparatus for breathing.

In the remarks I have to make at this time, I shall first give a brief history of the dispute; secondly, a statement of the principal points that have been debated, and the actual condition of the controversy; and thirdly, an expression of my own opinion on the anatomy and physiology of the Siren lacertina.

I. A concise sketch of the proceedings concerning the siren and other reptiles of a doubtful character.

1. As long ago as 1807, M. Cuvier read a memoir to the National Institute of France on their organization. It was composed more particularly on the Axolotl of Mexico; and has been published with engraved illustrations, in the collection of observations in zoology and comparative anatomy, made between the years 1799 and 1803, by Messrs. Humboldt and Bonpland, on the Atlantic Ocean, in the interior of the new continent, and in the South Sea. 4to. &c. From the most careful dissection and an acquaintance through original observers of the habits of the siren and proteus, he pronounces them to be perfect animals; while the Axolotl must be considered only as a larva (see vol. I. p. 123.) There are three figures of the siren annexed, in which, among other matters the distribution of the blood through appropriate arteries to the gills or branchiæ, and its return by the veins are clearly shown.

2. Benjamin S. Barton, M. D. & P. who did much for the natural science of our country, published in 1808 the observations he had made in Philadelphia on the Siren lacertina, in the form of a letter to Professor J. G. Schneider of Saxony. In this publication he repels the notion expressed by that able zoologist, that the Siren lacertina is a larva or tadpole; and states his conviction that it is a finished animal, which never loses its branchiæ or gills; (p. 5.) but continues to breathe by means of them as well as by lungs the whole term of its life. He affirms (p. 11.) that the siren, as Garden and Linnæus both asserted, breathes by gills and by lungs. It breathes, he thinks, much more frequently by the former than by the latter of these organs. Indeed while the animal remains in the water, the branchiæ are almost incessantly in motion. During the more considerable movements he could plainly discern the three pectinated apertures under the branchiæ rapidly opening and closing. When the siren is at rest in the water, it employs its branchiæ with the greatest vigour as organs of respiration. When the siren swims, if Dr. B. is not greatly mistaken, the branchiæ are but of little use as organs of respiration. He thinks they act as the feet do, as members to assist the creature

in speeding its way through the water, or as the fins do in fish. He has known from observations on the individuals under his own eye, a siren to remain under water (p. 13.) for sixty-five minutes without coming to the surface. During this interval the siren continues almost motionless, and the motions of the branchiæ were very inconsiderable.

3. During 1817 Cuvier arranged in his *Regne Animal*, Vol. II. p. 103, the siren among the batracian reptiles, as possessing both gills and lungs.

4. It might seem after these disclosures, that the controversy was at an end. Yet this was far from being the fact. For, during the last mentioned year, Dr. Mauro Rusconi published a minute and elegant work in the Italian tongue, entitled "an anatomical description of the organs of circulation in the larva of water salamanders," in the form of a letter to Sign. G. B. Brocchi of the Royal Institute. This came forth at Pavia, in 4to. In this performance the author maintains the opinion that the modern zoologists are mistaken, (p. 28, 29,) in affirming that the Siren lacertina of Carolina and Georgia is a perfect animal. He is firmly persuaded that the creature must be an immature production not yet fully unfolded or developed. In page 45, he recommends an examination of the skeleton for the purpose of determining from the bones which compose it, whether the animal was fully grown and adult, or not. In page 46–47, he expresses the sentiment, that even in an animal so large as the Siren lacertina, it would be impossible to see and follow all the principal arteries by injection in specimens that had not been examined immediately after death, but which had been immerged a long time in alcohol spirit. And from a comparison (p. 40,) of the skeleton of the Siren lacertina with that of the Proteus anguinus, he derives arguments to confirm his opinion, that the former is but a larva, or incomplete animal.

5. In 1819 came forth, in the same city and language, the splendid work, in imperial 4to. on the Proteus anguinus of Laurenti, with superb plates of Peter Configliacchi, Professor of physics in the university there, and Dr. Rusconi, lecturer on

physiology, &c. "If you have," writes the latter to me in his epistle of November 4th, 1820, "a spare specimen of the Siren lacertina in your collection, I should be unspeakably glad to receive it, and delighted beyond measure to dissect it. You will find in the perusal that I differ from Cuvier, who considers it a perfect animal. I therefore feel a peculiar desire to anatomise this larva, and to peruse the memoir of Professor Barton, as thereby, I am persuaded, I should find new arguments to confute the opinion of that famous zoologist. The Chevalier Valentin assures me," &c.

In this elaborate performance the authors consider themselves as having demonstrated that the Siren lacertina is only the larva of a water salamander, and that zoologists have been mistaken in supposing it a perfect animal. They believe also that the many observations they have made on the Proteus anguinus while living, and the dissections they have conducted after death, satisfactorily show that it is a perfect animal, furnished *with gills but not with lungs*. Whence the distinguished zootomists draw the conclusion, that there is no animal in existence that has gills and lungs in use at the same time.

6. The inquiry just mentioned was apparently promoted in a considerable degree by the printed description of the Proteus anguinus by the celebrated Schreibers; a copy of which I had the honour of receiving from him at Vienna, with a specimen of that curious and rare reptile. Among others it contains these sentiments: "it breathes by external naked gills after the manner of batracian gyrini: but they are many-cleft, and endure through the whole life: it respires too by lungs, truly arbitrary, very simple, and exceedingly like the air bladders of fishes: but they are double, and furnished with a trachea and glottis, as other batracians are."

7. Still later, to wit in 1821, Dr. Rusconi published another laborious and instructive work at Milan, in French, 4to., with five coloured plates, under the title of "the Loves of the water salamanders, and the development of the tadpole of these salamanders from the egg to the perfect animal," &c. It is intended to elucidate the difficult, intricate, and unde-

cided structure of the Siren lacertina, as well as the *salamandra exigua* (newt or spring lizard,) and the congeneric and analogous families of batracian animals; for which purposes it is a prime work. For curious representations of their amours, the first and second plates are worthy of being consulted; for their hatching and growth on the leaves of the polygonum, (persicaria,) the delineations on plate third are admirable; and the anatomical displays on the fourth and fifth plates are well calculated to explain the constitution and function of these aquatic reptiles.

8. It happened in 1821 that I had for the first time an opportunity of dissecting a siren. Aided by my friends Dekay and Anderson, the following memorandum was made on examining the specimens which had been preserved in spirits: "Larynx before and under the pharynx. Trachea bifurcating behind the heart; from it bronchial tubes are extended with a pulmonic structure that is cellular, and terminates on each side, not in bags, but in points formed by the structure becoming gradually narrower. As they proceed from the lower or posterior half of their length, they end on each side under the kidneys."

9. It is the opinion of Captain Le Conte, in a paper published in the Annals of the New-York Lyceum, p. 52, (1823,) that the Siren lacertina has lungs, but not gills; in which case the fimbriated appendages to the neck are to be considered mere opercles or covers to the spiracles or breathing holes near them.

After these and other researches on the subject of these remarkable creatures, the things to be investigated concerning the Siren lacertina, which is sufficiently proved to be a perfect animal, are these two: 1. What is the real constitution of the circulatory organs? and 2. Is its respiration performed by gills after the manner of fish, and also by lungs after the manner of reptiles generally?

II. Summary view of the points in debate, and of the present state of the controversy.

1. On the Proteus anguinus.

Schreibers, Cuvier, Rusconi and Configliacchi, all agree that the four-footed reptile of the subterranean lakes in Carniola, is not a larva, but a perfect animal.

They differ, however, concerning one very important matter: for Schreibers and Cuvier contend that the creature is endowed with a two-fold set of respiratory organs, lungs, and gills; while Rusconi and Configliacchi affirm that no living being has such a double apparatus in use at the same time, and that the Proteus anguinus possesses branchiæ or gills, but not lungs. They declare the sacs or bags receptive of air, resemble the vesicæ natatoriæ of fishes. Yet these acute observers are at a loss to determine their real function.

2. On the Siren lacertina.

The zoologists are divided in opinion. Garden, Linnæus, Barton, Cuvier, and Le Conte, consider it as a perfect animal: but Rusconi and Configliacchi are strenuous in the opinion that it is only the larva or tadpole of some water salamander.

Le Conte states that the female siren has often been examined by him in full roe or spawn; that is filled with ova or eggs, while the gills or opercles were complete; whence a conclusive inference may be drawn that it is a complete and finished animal. Concluding thus it is a perfect creature, the same accurate observer does not admit that the neck-appendages are gills or breathing organs, but inclines to think the sacs or bags within the body perform the respiratory function.

On the other hand it must be observed, that in an animal similarly organized in this respect, to wit, the Proteus anguinus, Rusconi and Configliacchi repel this notion altogether; alleging that the cervical fimbriæ, or fringes, are real branchiæ or gills, and that the air-sacs in the body, answer some purpose to them unknown.

Dissection having shown that there is a near resemblance in the external appendages, and the internal sacs in the proteus and siren, it is fairly presumable that the same interpretation of the functions of these several organs applies to both. If therefore the physiology of the siren can be de-

termined as to their use, respectively, the same reasoning will apply to the proteus.

3. On the salamander, including the other creatures strictly batracian, as the lizard, toad, and frog.

It is agreed by all zoologists, that the eggs of this order of reptiles are hatched first into a larva, or masked being, called a gyrinus or tadpole, having excrescences on both sides of the neck, performing temporarily the office of lungs, but shriveling up or dropping off, when the individual undergoes a further metamorphosis, and assumes the character of a perfect or complete animal. It is also understood that these branchiæ, or gills, act only until the lungs are evolved and brought into play; but do not perform any pulmonic or respiratory function after the lungs are capacitated for breathing. In other words, these reptiles employ gills and lungs in succession, or one after the other; but not in conjunction, or at the same time. They have not, therefore, a two-fold, or double and co-existent set of respiratory organs.

It having been admitted on all sides that the proteus is a perfect animal, and it being demonstrated by American zoologists that the siren is likewise a perfect animal; the anatomical and physiological history of larvæ, gyrini, or tadpoles, has no application to them.

In the conflict of opinions concerning the respiratory economy of these animals, all parties admit that they breathe or perform a respiratory function. But it is by some still demanded whether this is effected by gills and lungs jointly? by gills alone? or by lungs or internal sacs, without the aid of gills?

It would seem a very natural and rational inference from the persistence of the fimbriated appendages covering the spiracles or openings in the sides of the neck, through the whole life of the creature, that they are not useless members of the body, but execute some important office. There is none so probable as that they minister to the limited breathing of animals having cold blood, and languid circulation. In this

respect, the siren and proteus seem to connect reptiles with fish.

III. The signification of my own sentiment on this controverted and complicated subject.

My observations will be arranged under two heads: 1st, those made on dead sirens: 2d, those made on living sirens.

1. The zoological description is so well known, that there is no need of introducing it here. My notices will therefore be confined to the (*a*) respiratory, and (*b*) circulatory organs. It affords me pleasure to state that in my researches made within a few days, I was aided by my friends Dr. Samuel Akerly, and Dr. Frederick A. King. To the former of these gentlemen I owe the drawing which accompanies this memoir; and by the latter I was assisted in the dissection.

(*a*) It is certain that the siren has a glottis, or rima glottidis, a quarter of an inch or thereabout, posterior to the os hyoides. It appears in the form of a longitudinal slit, with muscles for closing and opening it. There is a small elevation before; and two grooves proceed a short distance obliquely downward and backward, toward the spiracles or cervical openings. Those parts may be considered as the larynx.

There is no more doubt to be entertained that a tube like a trachea exists. It extends half an inch or more, as a single or undivided canal, on the upper side or in rear of the heart, until it approaches the diaphragm.

The evidence is quite strong that there are bronchiæ; near the diaphragm, the trachea divides into two branches, which enter into and communicate with the lungs, if the air sacs or bags may be so called. Within the abdomen are two receptacles of air, and on each side of the vertebral column. They have a flounced or puckered appearance, and extend in some individuals beyond the vent. Their posterior extremities end in points by gradually tapering away. A probe can be readily introduced into them from the throat, and it is perfectly easy to fill them with air or quicksilver. As the creature has no ribs, and these air vessels are in the belly, the

termined as to their use, respectively, the same reasoning will apply to the proteus.

3. On the salamander, including the other creatures strictly batracian, as the lizard, toad, and frog.

It is agreed by all zoologists, that the eggs of this order of reptiles are hatched first into a larva, or masked being, called a gyrinus or tadpole, having excrescences on both sides of the neck, performing temporarily the office of lungs, but shriveling up or dropping off, when the individual undergoes a further metamorphosis, and assumes the character of a perfect or complete animal. It is also understood that these branchiæ, or gills, act only until the lungs are evolved and brought into play; but do not perform any pulmonic or respiratory function after the lungs are capacitated for breathing. In other words, these reptiles employ gills and lungs in succession, or one after the other; but not in conjunction, or at the same time. They have not, therefore, a two-fold, or double and co-existent set of respiratory organs.

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respect, the siren and proteus seem to connect reptiles with fish.

III. The signification of my own sentiment on this controverted and complicated subject.

My observations will be arranged under two heads: 1st, those made on dead sirens: 2d, those made on living sirens.

1. The zoological description is so well known, that there is no need of introducing it here. My notices will therefore be confined to the (*a*) respiratory, and (*b*) circulatory organs. It affords me pleasure to state that in my researches made within a few days, I was aided by my friends Dr. Samuel Akerly, and Dr. Frederick A. King. To the former of these gentlemen I owe the drawing which accompanies this memoir; and by the latter I was assisted in the dissection.

(*a*) It is certain that the siren has a glottis, or rima glottidis, a quarter of an inch or thereabout, posterior to the os hyoides. It appears in the form of a longitudinal slit, with muscles for closing and opening it. There is a small elevation before; and two grooves proceed a short distance obliquely downward and backward, toward the spiracles or cervical openings. Those parts may be considered as the larynx.

There is no more doubt to be entertained that a tube like a trachea exists. It extends half an inch or more, as a single or undivided canal, on the upper side or in rear of the heart, until it approaches the diaphragm.

The evidence is quite strong that there are bronchiæ; near the diaphragm, the trachea divides into two branches, which enter into and communicate with the lungs, if the air sacs or bags may be so called. Within the abdomen are two receptacles of air, and on each side of the vertebral column. They have a flounced or puckered appearance, and extend in some individuals beyond the vent. Their posterior extremities end in points by gradually tapering away. A probe can be readily introduced into them from the throat, and it is perfectly easy to fill them with air or quicksilver. As the creature has no ribs, and these air vessels are in the belly, the

air is probably inhaled by the action of the muscles about the throat.

The existence of external appendages, one on each side of the neck, is evident to the most superficial beholder. They are very different in appearance from the opercula or gill covers of fish. They have a more near resemblance to gills themselves; but instead of being naked, in their exposed situation, they are covered with skin or common integument. The striking difference between the gills of sirens, and those of fish, consists in this, that in fish the branchiæ are placed upon and along the curved cartilages called branchial arches, and covered or protected by the opercles, or gill covers; whereas in sirens, the cartilages in the spiracles or cervical openings are destitute of gills, which are transferred to the sides of the neck, just in front of those passages, and fold over them: and these transferred branchiæ having no opercula or covers, are guarded from external injury as the other parts of the body are. It must be observed, however, that the branchiæ thus constituted are so far divided and subdivided as to allow air, water, and the mixture of the two, to be applied to an extensive external surface, though doubtless with less effect than to the branchiæ of fish.

(*b*) The heart, consisting of one ventricle and one auricle, sends off a large pulmonary artery toward the head, which divides into three branches on each side, corresponding to the three several groups or bundles of fringes into which the branchiæ ramify. These arteries bring blood fresh from the heart and carry it to the gills, whence it returns by corresponding veins.

From the heart also proceeds an aortal artery, which descends along the spine and distributes branches to the air-sacs, the viscera, and the rest of the body; whence it returns by a vena cava. It is consequently established that both the organization of the siren for breathing and for distribution of blood, warrants the conclusion that there are air sacs within, and gills without the body, to and along which the vital fluid circulates.

2. The physiology of the siren can, I presume, be determined only by a careful observance of its habits, life, and manners in its living state, and in its native element. That element is not water, but mud. The observations heretofore made upon sirens kept in water are therefore imperfect and unsatisfactory; inasmuch as they are not aquatic animals, and when kept in pure water, are not in a situation that is natural to them, but though placed where they may not only live, but even live a long time, they are nevertheless in a forced, and to them, a constrained and unnatural condition. It is not therefore to be expected that the facts gathered from sirens kept in water would be so instructive as those collected from them while living in their native mud. It was my good fortune to obtain them in full health amidst their native mud from South Carolina, in an ample and convenient tub.

There is no doubt about the reception of air into the internal bags or sacs of the abdomen. On considering the operation of air after its admission, upon the sacs, and of the sacs upon the air, there is warm altercation. If respiration is provided for by cervical appendages or branchial fimbriæ, the existence of another set of organs for breathing might seem wholly superfluous and unnecessary. But as these capacious sacs exist, and occupy much space in the siren's abdomen, there is ground to suppose they are intended for some valuable purpose. It is a desideratum of some consequence to discover the exact function they perform.

From the simplicity of these sacs or bags; from their extent and capacity; and from the condition in which they are found after death, it may be questioned whether they are strictly lungs, in the sense usually applied to that term. It is a proper subject for inquiry whether they perform respiration to full extent, or partially, or not at all. I think it highly probable their principal function is to receive and contain a quantity of air, which is derived from the atmosphere by the mouth, and gradually emitted in small quantities, or minute bubbles, sometimes by the mouth, and sometimes through the cervical holes or spiracles. When discharged by the mouth,

it may be supposed to have undergone a respiratory operation in the sacs; when discharged through the spiracles, it may be considered as unchanged or unrespired air. Under this view they may be considered chiefly as reservoirs or gas-holders, whose leading function is to afford an occasional supply, in minute portions, pro re nata, of respirable or uncontaminated air to pass through the spiracles, and be conveyed through the medium of mud and water to the gills, whenever the external medium shall yield an insufficient supply. The creature is thereby enabled to live longer in its native element than would otherwise be possible, and where its life and existence are in mud abounding with the recrements of corruption and the wash of nastiness, a more than common organization for breathing would seem to be requisite. Such a provision prepares the animal for its peculiar habits and its obscure destiny.

The subject admits of elucidation from the remarkable structure I have observed in a mammiferous animal. Arguments from analogy are not always conclusive; but they sometimes afford important illustrations. The *phoca cristata* or *hooded seal*, has a sac or bag of considerable size on the top of its head, over and above the septum of the nostrils. This is open through to the nares before and to the fauces behind. The individuals of the phoca, or seal family, have the power, by means of orbicular muscles, to close the orifices of their noses very accurately, and of thereby excluding the entrance of water: and like other mammalia, enjoy also the power of closing the posterior nares by the velum pendulum palati. As far as I understand the use of this hood or sac on the crown of the head, it is an air-bag or receptacle of the atmospheric gases, to be filled and inflated at the will of the animal. When it is on the surface of the water, and intends to dive or sink, a quantity of air may be received into this cavity, and retained there, by closing the anterior and posterior nares. During the submersion, the lungs, which are inflated at the time of going under water, may discharge their vitiated or unvital air through the mouth; and by opening the posterior

nares, while the anterior nostrils remain closed, there is a transfer of atmospheric air, from the hood or sac, to the evacuated lungs. And thus the creature is enabled to prolong its stay below the surface or in the deep, for an inhalation longer than could otherwise happen, or for the duration that the hood or sac will furnish fresh air. Now, as far as this analogy extends, it goes directly to the illustration of a receptacle or reservoir which is not a pulmonary organ, but an occasional auxiliary to the function of respiration, according to the volition and need of the individual.

In order to understand the living functions of the siren, it must be remembered that it is a native of the swamps, living in mud, and not in clear water.

All the observations heretofore made upon individuals of this species, by gentlemen who have attempted to investigate their habits and manners, in tubs or vessels of water merely, are to be considered as having been bestowed upon them in a forced and unnatural state. The siren, who never quits without violence his native mud, has been contemplated by the zoologists and zootomists of the day, as an aquatic animal, like the newt or spring lizard (water salamander.)

Having been fortunate in receiving living specimens from South Carolina, nestling in their muddy element, I have observed their manners and habits with strict attention. Though kept in a half-barrel, sufficiently capacious for their motions, they never rose above the surface of the mud, nor crept about in the water with which it was sometimes covered to the depth of two or three inches. They concealed themselves within the mud, except their heads; these were usually visible in a hole resembling that in which eels often hide themselves. The greater part of the time their feet and gills were out of sight. But there seemed to be space enough around for the head, feet, gills, and spiracles to be surrounded with water or attenuated mud. When disturbed by the approach of the finger or any foreign body, or even sometimes by walking across the floor or agitating the vessel, they shrunk into their holes, and withdrew entirely from view. When left to themselves, they

would in a short time creep up again, and sometimes elevate their mouths to the surface of the water. Though when handled, and even washed and put into fair water, they were lively enough, they appeared to be fond of rest, and to be best satisfied with quietude in their muddy holes.

They sometimes, though rarely, gulped water, and passed it through their spiracles, and thereby raised a cloud of mud around their legs and gills. But as there are no branchiæ on the cartilaginous arches, as in fish, it cannot be inferred that this is a function of respiration. All that could be effected by this operation, was to remove the stagnating mud and water from their gills, and to procure the contact of fresh portions of one or both.

From the constant exposure of the gills to the surrounding medium, and their frequent motions, there is reason to believe their breathing is principally performed by these external organs acting upon the air contained in water, after the manner of fish.

I could not discover any regular or steady respiration by the air-sacs, or lungs, if such they may be truly called. When left to themselves for twelve hours or more, a small collection of bubbles like froth or foam was formed over their heads on the surface of the water. Yet these were emitted so slowly that I have watched until I was weary without observing the least extrication of air. Yet, I have occasionally witnessed bubbles of air proceed from their mouths; and it was constantly observable that, besides the great hole containing their heads, there was a small one proceeding from the gills. This was often on one side only. And bubbles could now and then be seen to issue from the spiracles. But in every instance, the air, instead of issuing in large bubbles or in a steady stream, came forth in very slow and detached portions, bearing some resemblance to the tardy and scanty extrication of gas in Nooth's machine for impregnating water with carbonic acid, when the sulphuric acid and the chalk have nearly spent their force.

On the whole, the most correct judgment I have been enabled to form on the Siren lacertina when living in its native element of mud, is contained in the following sentences: viz.

1. That as the reptile lives in nasty and stinking mud, impregnated with the admixture of dead animal and vegetable matter, there may be greater need of a double and co-existing set of respiratory organs than in fish, or even in other reptiles.

2. That the branchiæ, or cervical appendages, are placed on the outside of the body, for the more convenient exposure to aerated water, (that is, water charged with the proportion of air naturally derived from the atmosphere) than could happen if the gills were situated on the branchial arches on the sides of the throat as in fish.

3. That respiration is accomplished in these creatures without the necessity of passing water through the branchial arches, as in fish.

4. That for its easier performance they elevate themselves in their holes, and approach the surface where their heads emerge from the surrounding mud into the water.

5. That even here and under such circumstances, though left perfectly to themselves, they rarely raise their mouths above the surface of the water; far less come forth as frogs do, into the atmosphere.

6. That the vesicles of air within the abdomen, though furnished with a larynx, trachea, and bronchia, hardly deserve the name of *lungs*, in the proper sense of the word.

7. That instead of being primary organs of respiration, they seem to be auxiliaries only; receiving from time to time, and that only at rare intervals, a supply of air, and expending it by minute portions in aid of the gills when oppressed by foul mud, or disoxygenated water.

8. That these air-holders are replenished when the constitutional want of the siren requires a fresh allowance, by inspiration from the atmosphere; and that as expiration goes on generally at a slow rate, and in an indeterminate or uncer-

tain time, there is no fixed period for their evacuation, nor for the removal of their contents.

9. That the bubbles or particles of air proceeding from these reservoirs when emitted from the glottis, usually pursue the channels of direction towards the lateral openings or spiracles, that after passing through and escaping toward the surface, the intervening gills may have the benefit of their reviving influence; though if a somewhat larger quantity should be discharged than ordinary, a portion of the air may escape by the mouth.

10. That notwithstanding the vascularity of these air sacs, or pulmonary cavities, it may be doubted whether any function of a truly respiratory kind is performed by them.

EXPLANATION OF THE PLATE

FIGURE 1.

A. The inside of the mouth, after the removal of the upper jaw.

B. The os hyoides.

C. The glottis or rima glottidis.

DD. The two grooves proceeding obliquely toward the spiracles.

E. The back-bone and spinal marrow, seen after the removal of the upper jaw.

FF. The branchiæ in a triple arrangement.

FIGURE 2.

The thorax and abdomen displayed, showing the heart, pulmonary artery, aorta, stomach, intestines, liver, and pulmonary air-holders ending in points beyond the vent.

FIGURE 3.

Shows the bifurcation of the trachea, and its connexion with the pulmonary sacs or air-holders.

A. The trachea.

BB. The air-sacs or gas-holders.

Dissection of the Siren Lacertina

Fig. 1.

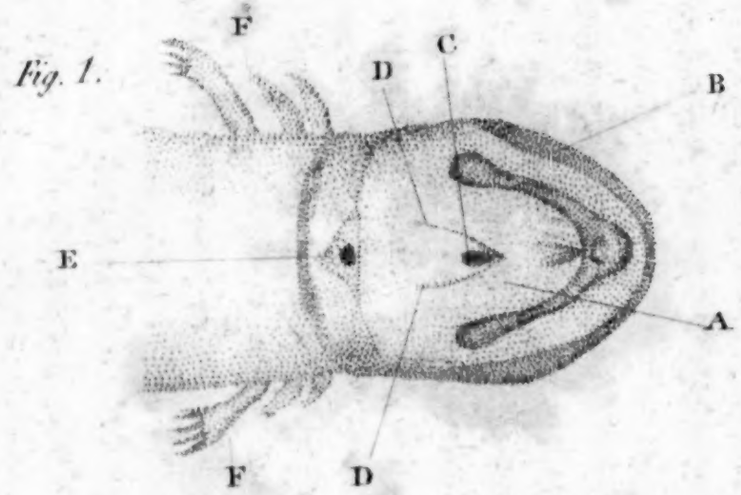


Fig. 3.

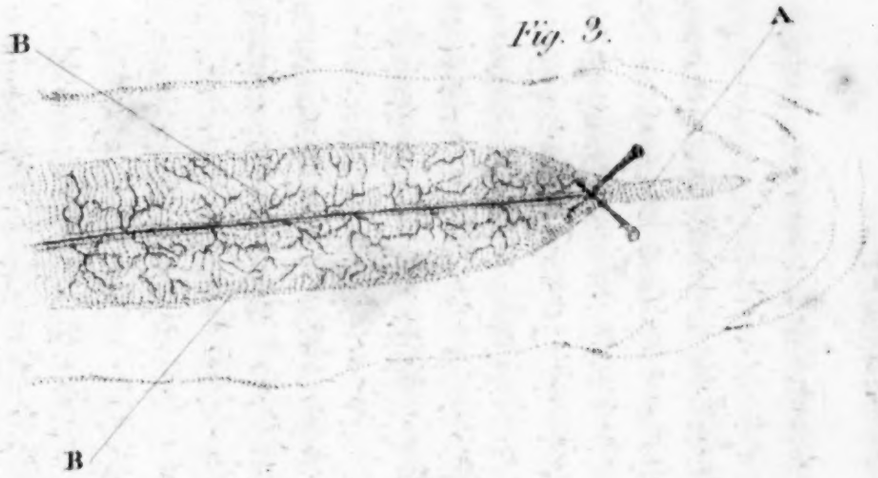
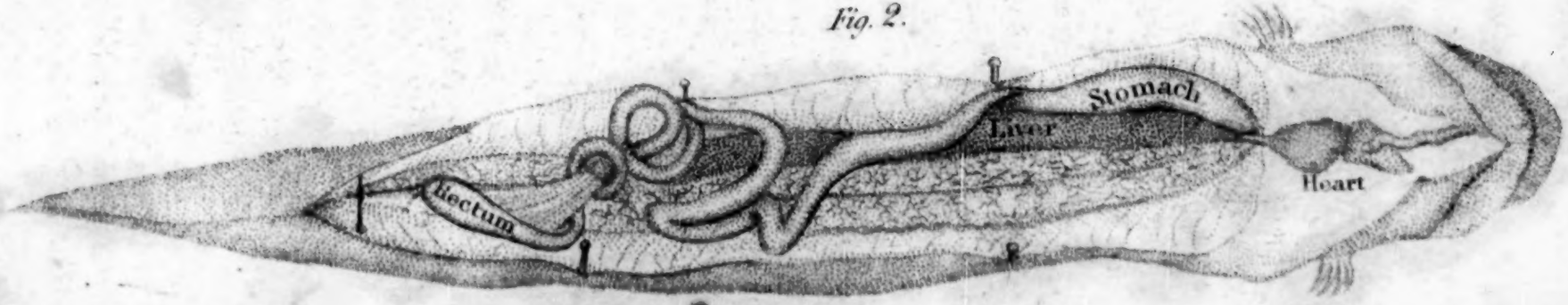


Fig. 2.



Dr. Abercy del.

ART. VIII. AN *Account of the* SMALL-POX *which occurred in the City of New-York, in the Winter and Spring of* 1823–4. By JOHN BELL, M. D. one of the Physicians of the New-York Dispensary.

A BRIEF history of the epidemic which, during the last season, has prevailed throughout the city to a very considerable extent, may at some future period possess an interest of which at the present time it is in a great measure destitute. Attempts at original views or new and ingenious observations carry with them, in this case, an air of something more than mere uselessness, since no disease, perhaps, in the whole list of nosography, has been more frequently and closely observed, or more accurately and minutely described. Its different stages have been laid down with a vast affectation of precision, and the slightest variations in the appearance of the eruption have been loaded with names, which serve no other purpose than to show that the subject has been long and attentively studied. Admitting all this, it is still important that the periods of occurrence of this, as well as of all other epidemics should be accurately noted. The facts in their isolated state are curious and interesting; their accumulation, from the opportunity it affords to some "master spirit" to mould them into form, and draw from them sound and practical inferences, must always be desirable.

Much has been recently said and written on the subject of the varioloid disease. The result is, that the opinion of the medical public is fast settling down in the conviction of its being merely a modification of the small-pox in consequence of previous vaccination. A few however are still incredulous, and feel unwilling to give up their belief in that beautiful theory, once considered so firmly established, that the vaccine disease furnishes a perfect immunity against the small-pox. It is perfectly obvious, from facts which have been accumulating for the last half dozen years, that the belief in the preservative power of the kine-pock was either too hastily adopted, or that

the disease itself, in its repeated transmissions through so many individuals in various states of health and disease for twenty-six years, has lost some of the virtue which it originally possessed. This last opinion is far from being wholly chimerical, though from the nature of the subject it cannot well be brought to the test of experiment, for we have every gradation of severity in the modified small-pox, from a close resemblance to the disease in its confluent form,* down to a mild disorder attended by few and scattered tubercular eruptions, so slight as not to prevent the individual from attending to his ordinary concerns.† Is it an unreasonable supposition, that the greater or less degree of influence, which the kine-pock has previously exerted upon the system, graduates, if the expression is admissible, the severity of the small-pox? It has been shown by experiment,‡ that re-vaccination, after the kine-pock has gone through its usual, regular course, will produce considerable irritation followed by the formation of a scab. A third and fourth vaccination is succeeded by less and less irritation, and by the formation of still smaller scabs, while the fifth repetition of the operation produces not the slightest effect. The conclusion seems fairly to follow, that in the first instance the system is not wholly under the influence of the vaccine disease; that its susceptibility lessens with every repetition of the operation, till at length, coming fully under its control, it is able completely to resist its subsequent introduction. Whether this lack of a complete subjection of the system to the vaccine influence in the first instance, arises from the constitution of the individual, the mode of performing the operation, or a deterioration of the virus, is immaterial to the present purpose, since either supposition gives countenance to the conjecture advanced above, that the power which the constitution possesses of resisting the attack of small-pox depends upon the

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* See case IX. † Case VIII.

‡ See some experiments on the varioloid disease, &c. by Dr. Darrach, in the Philadelphia Journal of the Med. and Phys. Sciences.

degree of perfection with which the kine-pock has run its course.

It is worthy of remark that not only through the winter but through the whole year past, there has existed throughout the country a predisposition to eruptive diseases. The measles particularly have been very prevalent and uncommonly fatal. In Baltimore, from the 1st of January 1823 to the 1st of January 1824, there occurred one hundred and fifty-six deaths from this disease. In Philadelphia, during the same period, one hundred and seventy-five; and in this city one hundred and seventeen, while but one solitary instance of death from measles took place in New-York the year previous. Nor has this disease been confined to the large cities, but has spread throughout the country.

The small-pox has followed the same course. It has appeared, often simultaneously, in various parts of the country, in small as well as large towns, from Charleston (S. C.) to Canada. It seems difficult to account for these curious facts, except by a recurrence to the opinion held by many of the ancient physicians, and advocated by Sydenham, that there are "peculiar constitutions of the air," which dispose the body to receive certain diseases at certain periods. What this "peculiar constitution" is, it is impossible to conjecture; we know, however, that it possesses no power of affecting the instruments by which we judge of the condition of the atmosphere. Whether it depends upon the electrical or magnetical state of the atmosphere, the influence of the heavenly bodies, as some, and even modern writers have supposed, or upon certain changes and decompositions which take place in the bowels of the earth, as Sydenham and various writers of his day conjectured, must at present remain a matter of curious speculation only. At some future period it is to be hoped that facts and observations constantly accumulating will throw some light on this dark subject.

Before commencing the remarks and cases which follow, it may not be improper to mention that they were minuted down at the bed-side, principally of applicants to the city dispensary,

in a district which comprises many individuals of the poorest and lowest class in the city.

The first deaths which occurred from this disease took place, according to the inspector's returns, in November, subsequent to the 20th of the month. They gradually increased till April, since when the number has been slowly diminishing, as will appear from the following statement.

Number of Deaths.

November (20th)	3	March	69
December	15	April	73
January	40	May	45
February	63	June (to the 12th)	14

It attacked principally the poorer class of citizens, and although not confined to any particular district, was more prevalent in that quarter of the city to the east of Broadway and above Duane-street.

The age which seemed most liable to its attack was the interval between ten and thirty, although many cases occurred previous to the former age. Of forty-three cases of the disease in its unmodified form, which came under my care, the medium age was a little more than eighteen. Of these, sixteen might be considered confluent cases, two of the variety called petechial, and the remainder of the distinct kind. The proportional number of confluent cases was here uncommonly large: whether this arose from accidental circumstances, or whether it was generally the case throughout the city, I am unable to say, but am disposed to think, from the opinions of several medical gentlemen, who have had opportunities of observing the disease extensively, that the latter supposition is probably the correct one.

The access of the disease varied much in severity, being strongly influenced by the age, habit, and previous health of the individual. The strong and robust above twenty-five seemed to suffer most severely. Of five patients above thirty-five, who came under my care, but two recovered; one of those with the loss of his eye-sight, and the other after a confinement to her bed of nearly thirty days. Children under

the age of six or eight suffered very severely, being cut off, in several instances, during the febrile stage, and before the eruption made its appearance. (See Case I.) The same result, in one instance, took place in an adult, (Case II.) In these cases the weight of the disease seemed to fall upon the brain, as was indicated by the delirium often amounting to raving, the redness of the conjunctiva, intolerance of light, severe head-ache, quick and strong pulse, with great heat of the skin, particularly of the head and face.

The disease, at its commencement, presented few, if any variations from the usual course of symptoms. It ordinarily began with loss of appetite, and in some few instances nausea and vomiting. This last symptom will be more particularly noticed in speaking of the modified form of small-pox. Acute pain in the head and loins was always present, and from its severity seemed to absorb the patient's attention so far, that unless questioned, the other and less obtrusive symptoms, such as nausea, thirst, hot and dry skin, with frequent chills, &c. were rarely mentioned. The pulse was usually quick and hard, not unfrequently demanding the use of the lancet.

This state, with occasional exacerbations, in most cases continued about four days, when the appearance of the eruption moderated the symptoms, and gave partial relief. The severity of the febrile stage did not, as I had been led to expect from the books, form an accurate indication of the quantity of the eruption. In several instances where the fever was very severe, the eruptions were few, and the subsequent course of the disease light. In the most grave and confluent cases, however, the efflorescence which usually precedes the eruption invariably appeared early on the third day. In the distinct form, the pustules maturated about the eighth day, and began to dry two or three days later.

In the confluent form, where large watery vesicles arose between the eighth and eleventh days, the disease invariably proved fatal. The greater number of deaths took place on the thirteenth day; one instance, however, occurred on the nineteenth, and another as late as the twenty-first.

The swelling of the face, so far as my observation extends, did not furnish any indication from which the probable severity of the disease might be conjectured. In the two cases above referred to, where death took place early in the disease, no swelling took place. In those instances where death occurred late in the disease, the swelling usually subsided with rapidity; at the same time the pustules became flattened, watery vesicles sometimes formed, the patient became usually comatose, sometimes delirious, and gradually sunk in from one to four days.

In every instance where dark blue or purplish spots appeared on the summit of the pustules, the termination was fatal. But two cases of this kind, as was before mentioned, occurred. (Case III.)

Of the number of patients mentioned above, which I attended, nine died, making a proportion of a little more than one in five. This may perhaps be considered a pretty fair estimate of the mortality of the disease throughout the city. The treatment adopted in these cases was, with slight variations, the one usually pursued; that of purgatives, refrigerants, diaphoretics, and occasionally bleeding, where there was great delirium, or throbbing of the head accompanied with redness of the eyes, in the febrile stage; and tonics and stimulants in the later stages, especially where there was a sinking of the pulse and flattening away of the pustules.

CASE I.

Keziah Titus, a light coloured mulatto infant, aged seven weeks, was taken April 15th with restlessness, hot skin, and a disinclination to take milk. The 18th, an eruption of small pimples, about the size of a pin's head, appeared over her whole body and extremities. The next day they were found of the same size, but with a small dark purple apex to each of them. The child, at this time, seemed almost insensible, and died in the evening. The pimples were very small and not surrounded by any areola.

CASE II.

Samuel Drummond, aged 38, a large, strong, robust man, much addicted to the use of ardent spirits, was taken March 6th with violent head-ache, and pain in the back and limbs. His skin was hot and dry, and he had frequent chills. His pulse was quick and remarkably strong. An active cathartic of salts and antimony was ordered. On visiting him the next day, I learned that he had been very delirious through the night, had made such violent exertions, that his wife was unable to retain him in bed, and he had several times made his way into the street. His medicine had not operated. Another active cathartic was ordered, with directions to give him an enema, which last were not however complied with. The next day, he was found comatose, and could not be roused. He died on the morning of the 9th. Reddish spots of the rash kind had appeared during the night on his face and breast.

CASE III.

Margaret Kelly, about 12 years of age, was taken on the 7th March with the usual symptoms of small-pox, and three days after was covered by an eruption of the confluent kind on the face and breast. After the eruption came out she was much relieved, felt considerable appetite, and was desirous of sitting up. No vesicles began to form on the pustules, even where they were most distinct and prominent. On the 16th, here and there a pustule began to assume a purplish tint on its apex. The number of these was much increased the next day. The 18th, purple spots, not only on the pustules but in the intervals between them, where any intervals existed, made their appearance. They varied much in size, from a mere speck to nearly the size of a sixpence. During the night she bled plentifully from the nose and gums. The next day she became comatose and insensible, and died in the afternoon.

CASE IV.

Diana Morrison, a mulatto, aged 18, was attacked on the morning of the 4th March with severe pain in the head and back, chills, &c. together with nausea at stomach and violent vomiting. The eruption approaching the confluent form

about the face, appeared on the evening of the 5th. The usual depleting remedies were advised. On the 7th, her mother, agreeably to the advice of some friends, "gave her a sweat," that is, forced down large quantities of cat-mint tea, while the patient was covered with an immense load of bed-clothes. After this display of prudence and maternal care, she retired to bed; the daughter, taking advantage of her absence, threw off the bed-clothes, got up, remained some time standing and walking about, and finally drank a large quantity of cold water. The next day I found her delirious, the pustules flattened and scarcely visible, and the pulse sinking. Tonics and stimulants were prescribed, together with blisters to the legs. The 9th, her pustules were more prominent, and her pulse stronger and not so frequent. The next day she continued nearly in the same state, with occasional delirium. On the 11th she became comatose and insensible, and died on the 12th.

By far the greater number of cases of small-pox, which occurred in the city, took place subsequent to vaccination. The possibility of such an occurrence was for a long time doubted, and there are even now individuals, who, notwithstanding the mass of evidence upon the subject collected in Europe as well as in our own country, are still skeptical. It has recently been pronounced by one of the most eminent and experienced vaccinators in America,* "as fantastical as it is unscientific to talk about the 'modifying powers' of vaccination, viz. its half-way preservative powers." "To any one who has imbibed such an opinion, I would only say that I have within twenty-two years past, vaccinated 80,000 persons, and that many hundreds of my vaccine patients have been tested with fresh small-pox matter and infection; not one of the whole number have I ever known to take that distemper.

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* Extract of a letter from Dr. Fansher to Dr. Waterhouse. Boston Med. Intelligencer, June 1824.

But if the numerous public experiments of small-pox virus on vaccine patients in America is deemed insufficient, the testimony of the Royal Jennerian Society of London should for ever settle the question." "The medical council of the London Vaccine Institution admits not of a controlling or modifying power of vaccination. It is as sovereign a prophylactic, as complete a preventive, as the small-pox itself against its own future occurrence." The supporters of this opinion believe in the existence of "a pustular disease, that resembles small-pox, distinct from it and chicken-pox." The most conclusive mode of refuting these opinions is by a recurrence to facts. The following case, or rather experiment, which fell under my observation, is directly in point, and goes, as far as one case can, to establish the identity of small-pox and the varioloid disease.

A quantity of lymph was taken on the point of a lancet from a patient* suffering under the varioloid disease, on the third day of the eruption, and fifth of the disease, and inserted in the arm of a healthy child of seven years of age, who had neither been vaccinated nor inoculated previously. Three days after, the point where it was inserted became red and inflamed; a small pustule followed, which contained a fluid on the eighth day. At this time the child sickened and was confined to its bed. The next day about thirty pustules appeared on its body and extremities. But five of these pustules maturated. The rest gradually disappeared, and were entirely gone by the time the others were scabbed over. This child was afterwards inoculated with the small-pox without taking the disease.

In another child, a few years older, likewise unprotected either by vaccination or inoculation, a quantity of lymph from

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* A lad of fifteen, who was taken with the usual symptoms of varioloid, the eruption appearing on the evening of the third day, and beginning to dry on the seventh, when the patient returned to his usual employment. He was vaccinated when a child, and had a well-formed cellulated cicatrix on his arm of the size of a sixpence.

a varioloid patient was inserted in the arm, and a quantity of the vaccine virus, at the same time, in the same arm, about two inches below the first puncture. Two pustules formed, which advanced with about equal rapidity; the varioloid one being a little the largest, and encircled with the most extensive areola. On the eighth day they both contained lymph, which became pus the next day. The child at this time had considerable fever and kept her bed. The next day about a dozen tubercular eruptions appeared on her back and legs, none of which ever suppurated. Three days after they had almost wholly disappeared. This patient was afterwards vaccinated, with no other effect than the production of a slight irritation, which lasted two or three days.

This is precisely the course which the small-pox pursues, when introduced into the system at the same time with the vaccine virus, as will be readily seen by a reference to the numerous cases of the kind on record. The similarity of the attack, and the resemblance of the eruption in its early stages, are alone nearly sufficient to identify the two diseases.

It is impossible to make an accurate estimate of the proportion of cases, which appeared after and before vaccination, but I am disposed to think, from the opinions of several physicians who had extensive practice in the disease, joined to my own observation, that the number was nearly as three to one.

In probably more than three-fourths of the cases of modified small-pox, the disease appeared between the ages of ten and twenty. The youngest case which I saw of it was eighteen months, and the eldest twenty-eight years; between these periods the interval between fourteen and eighteen seemed most liable to its attack. Its severity bore no uniform reference to the age of the patient. Its access was so similar to small-pox in its natural form, that the description of the one will answer for the other, with the slight variations mentioned below. The same pain in the head and back, and the same state of the skin and pulse were always present, but in a more variable degree. In some instances it assumed all the severity of the worst form of coherent small-pox; in others it displayed

so great a degree of mildness as hardly to compel the patient to confine himself to the house; in all, however, the appearance of the eruption gave great relief, and the commencement of convalescence was usually dated from this epoch. At the access of the disease, nausea and vomiting, sometimes violent, seemed a more prominent symptom than in the natural small-pox. The disease likewise appeared to affect the lungs more in the modified than the pure form of the disease. Fullness and oppression of the chest, sometimes amounting to acute pain and attended by cough, were not uncommon symptoms, and frequently demanded the use of the lancet. Indeed, so strongly were these symptoms marked in one of the earliest cases which I saw, that I had no hesitation in pronouncing the disease a commencing pneumonia.

In most cases, the greater proportion of the pustules were of the tubercular kind, remaining prominent three or four days, and then gradually disappearing. These, however, were often mixed with scattered pustules which became vesicular, maturated, and formed scabs, all within the space of five or six days. In the more severe cases, all the pustules went through this course, and in one instance, where the disease was peculiarly grave, left depressions in the skin, smaller and more superficial than those usually left by the small-pox, but still indelible. (Case IX.)

It has been said that the peculiar odour of the small-pox does not attend the modified form of the disease. Where the number of suppurating pustules is small, or where none reach this state, it is difficult to perceive any thing of this smell; but where the eruption is plentiful, and the pustules are well filled, this peculiar odour is as distinctly observable as in the ordinary cases of the original disease.

The duration of the disease more frequently fell short of than exceeded nine days; four or five of which were taken up by the febrile stage, and the remainder by the eruptive. No instance of its having proved fatal has come within my knowledge.

In the following cases, some of the mildest as well as some of the severest have been selected, together with some instances of irregularity in the course and appearance of the affection.

CASE VII.

Lewis Gasherie, a strong healthy young man, of about 19 years of age, who had been vaccinated when a child, was taken March 2nd, with a violent pain in the head and back, a sense of fullness and oppression in the chest, a slight dry cough, and occasional chills. His friends gave him a dose of salts, followed by warm herb tea. The salts operated freely on his bowels, and the tea produced an abundant perspiration.

I saw him for the first time on the 5th, found his skin moist, pulse 100 and soft, and his tongue furred. The pain in the head and back still continued, although much diminished. The oppression and pain in the chest remained the same. Gave him a gentle cathartic, small doses of the pulvis antimonialis, and applied a large blister to his chest.

March 6th. Cathartic operated well; his skin is soft and moist, pulse 86, soft and regular. A scattering eruption appeared yesterday afternoon over the whole body, amounting perhaps to two hundred pustules. Blister drew well, and has given partial relief to the lungs.

From this time he rapidly improved. But three or four of the pustules maturated; the rest gradually disappeared. On the 10th he was out, attending to his business.

In the plate, figs. 10, 11, and 12, show the appearance of the eruption on the second, third, and fourth days of the disease, and may serve as a pretty accurate representation of its usual course.

CASE VIII.

G. S., a young gentleman about 22 years of age, was troubled with loss of appetite and a dull pain in the head and back. This continued for three days, leaving him able to attend to his business the greater part of the time. On the fourth day these symptoms increased somewhat in severity, compelling him to keep his room; a laxative dose was pre-

scribed for him, which operated well. In the evening about half a dozen papular eruptions made their appearance on his face, and an equal number on his breast. The next day he felt quite well; his appetite was nearly restored, and he returned to his business. None of the pustules ever maturated, and at the end of a week every trace of them had disappeared.

CASE IX.

J. B., aged 22, a young gentleman of a sanguine temperament and florid complexion, after feeling a little unwell for a day or two, was attacked on the 5th of April by head-ache and a severe pain in the back, was soon after sick at the stomach, and vomited slightly several times.

I saw him on the sixth: found his face flushed, his eyes red, tongue furred, skin dry and hot, pulse 120 and full. The pain in the small of the back was very severe, and that in the head very considerable. Bled him twenty ounces, and gave him a cathartic followed by small doses of the pulvis antimonialis. At night, found the pain and fullness in the head had disappeared, and that in the back much lessened; pulse 100, and skin slightly moist. His cathartic had operated well, but the pain in the loins, though diminished, still continued.

April 7. His face is covered with a great number of minute red pimples, which are so numerous as to give the countenance a deep red colour at a little distance; when closely examined, however, they may be distinctly seen. He has still a slight head-ache; the conjunctiva of the eyes is injected with blood, and the pain in the back has become quite severe. His nose bled profusely twice during the night, pulse 110. Bled him twelve ounces, and gave him a cathartic of rhei and calomel.

8th. Feels better, head and back easier, eruption is coming out well, and is very plentiful. Pulse 100, and rather full: gave him another cathartic.

9th. The eruption on the face resembles in every respect the confluent small-pox at the 6th or 7th day.

10th. His face, particularly his eyelids, lips, and nose, is much swollen; complains of a hot prickly sensation in his skin; the pustules are numerous on his body and particularly

his lower extremities, and in some spots may be considered confluent. A few of them about his lips and chin are beginning to assume a whitish appearance at the summit: pulse 80 and soft, throat very sore, tongue covered with a thick white fur. The peculiar smell of small-pox is distinctly perceivable. The room where he is confined is large and well ventilated.

11th. Nearly one half of the pustules are filling with pus. His face is much swollen, and his eyes nearly closed: pulse 75 and soft.

From this period he recovered rapidly. At this time (June 1st) his face is considerably marked, and will probably continue so. He was vaccinated when a child, and has a large irregular cellulated cicatrix on the arm.

CASE X.

John Smith, aged 7 years, was taken the 15th of March with pain in the head, sickness at the stomach and vomiting; his tongue was coated, and his pulse full and quick.

On the 17th, a bright coloured rash (see plate, fig. 5.) made its appearance, covering the nates and extending down his legs to his ankles. On his body, arms, and face, a scatterred eruption of pustules came out; but not a single one on those parts covered with the rash. In about three days the rash disappeared, and the pustules assumed the dirty yellow, branny surface, which they usually put on. This child's mother says he has had the measles and the chicken-pox. He was likewise vaccinated when an infant, and has a well formed scar.

A person died of the small-pox in the house where this patient lived, the day before he was taken, and another lay sick of the disease at the same time.

CASE XI.

Christina Platt, aged 5 years, was taken the 12th of April with repeated chills, succeeded by a hot dry skin, flushed face, furred tongue, pains in the head and legs, and heavy watery eyes, together with restlessness, starting, and screaming out in her sleep. An eruption of red blotches of the size of a

sixpence, with a single little red pimple in the centre, having precisely the appearance of flea-bites, came out on the 16th. They altered but little in appearance the next three days. The child had a tolerably good appetite, and played about as usual. By the 22nd they had wholly disappeared.

There were several circumstances in the symptoms and course of this disease which gave it considerable resemblance to the measles: her mother however assured me that she had suffered severely from this disease the summer before, at a time when it was very prevalent. She had been vaccinated two years before, and had two well-formed cicatrices.

CASE XII.

William Deboule, aged 20 years, was attacked the 16th March with slight pain in the head and back, and a very severe one in the left side, increased by a deep inspiration. His tongue was slightly coated, and his pulse full and quick, (96.) He was bled twelve ounces, and took an ounce of sulphate of soda.

18th. The pain in the side has disappeared, and his head is relieved. A few scattering eruptions appeared this morning, most numerous on the face and breast.

19th. The pimples have increased a little in size. He says he feels perfectly well, and is desirous of going out.

20th. The greater part of the pustules are covered with a yellowish, branny scurf; the remainder are disappearing. One or two on his face contain pus, and are beginning to dry. Consider him cured.

On the 24th I was again requested to visit him, and found him covered with pustules which had appeared the day before. They went on to suppurate, and began to dry on the 30th, after which he rapidly recovered.

In this case there were evidently two distinct crops of pustules, the second appearing just as the first was dying away. A slight degree of fever preceded the second eruption, which left him as soon as it made its appearance. This second crop assumed a resemblance to the small-pox in a remarkable degree,

but commenced scabbing several days sooner. Although the skin remained discoloured for some time, no permanent marks were left by the pustules. Figures 6, 7, 8, and 9, in the plate, represent the appearance of the pustules on the 2nd, 3rd, 5th, and 6th days, together with the marks of the former eruption.

The following case of secondary small-pox is added in consequence of the rarity of its occurrence, and from its strong resemblance to the same disease modified by vaccination.

CASE XIII.

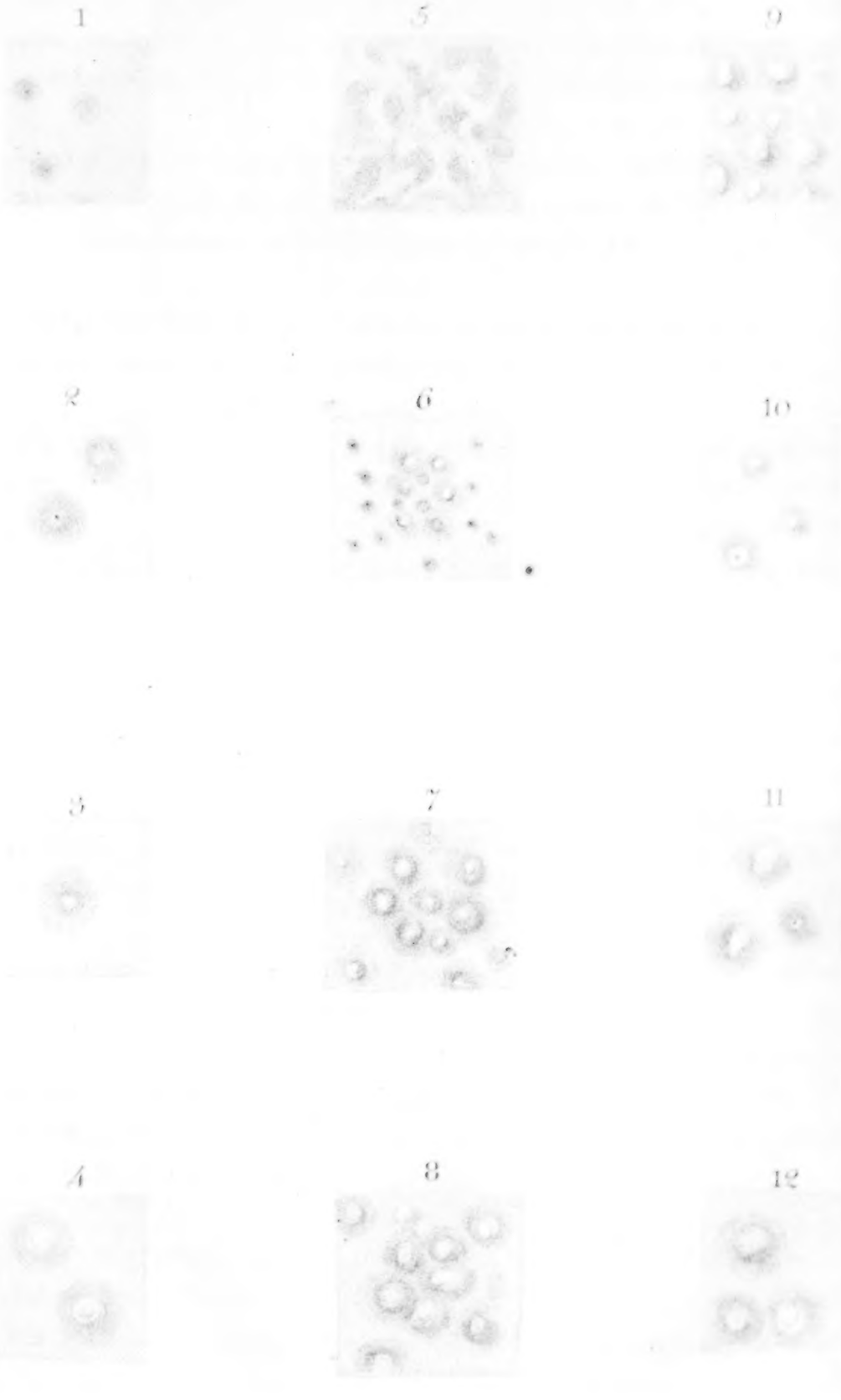
Eliza Dusenberry, aged 18, was inoculated with the small-pox fifteen years since, by a respectable practitioner in the city. From her mother's account, about thirty or forty pustules followed the introduction of the disease. No marks are now visible, except two small cicatrices on the left arm. She was attacked March 2nd with a severe pain in the head, limbs, and loins, accompanied by occasional chills. She had considerable nausea, and made several slight attempts to vomit. Her cheeks were flushed, her skin dry, her tongue slightly coated, and her pulse 92 and rather hard. Appropriate remedies were prescribed.

March 3d. Her medicine has operated favourably. The pain in the head and back has disappeared, her pulse is less frequent, her skin soft and moist and her tongue more coated. This afternoon a few red pimples appeared about her mouth and on her forehead.

4th. The number of pimples has increased, and they have become larger and of a brighter colour. She has still a dull aching pain in the head.

6th. About one half the pustules have acquired a small, white, vesicular summit, about the size of a pin's head, which when ruptured is found to contain a minute quantity of transparent lymph.

7th. Those of the pustules which were vesicular yesterday, are to day covered by a thin, dirty, orange-coloured scurf, hardly meriting the name of scab, which upon removal is not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found to contain any purulent matter. The other pustules have become smaller and paler, but have still a narrow areola of a reddish colour surrounding them.

Ten days after the first appearance of the eruption, it had so far disappeared as not to be noticed without close examination, when a slight discolouration might be perceived.

This is the only case of a second occurrence of small-pox in the same individual, which fell under my observation. Its resemblance to the same disease after vaccination is very striking, and will appear more obvious by a reference to the accompanying plate, where figures 1, 2, 3, and 4, represent the 1st, 2nd, 3rd, and 4th days of the eruption.

It is important that we should be able to form a just estimate of the value of vaccination. From the cases just detailed, and from numerous others, which came under my care, the following conclusions seem to me the most important, as well as the best founded. Should they be found to correspond with the opinions of others, their confirmation may possess some weight; should they differ, the discrepancy may perhaps be owing, on my part, to a too limited number of cases, or to a want of accurate observation.

1st. Vaccination acts as a complete preservative to a very great proportion of those exposed to the contagion of the small-pox.

2nd. It slightly modifies the access of small-pox, rendering the attack somewhat milder, although the stomach and respiratory organs are more often affected than in its ordinary course.

3d. It possesses a controlling power over the progress of inflammation in the eruption, shortens its course, in the majority of cases prevents it going on to maturation, and in almost every instance obviates the occurrence of secondary fever.

4th. It takes away *nearly* all danger of a fatal termination.

With these powers, vaccination is invaluable, and should be warmly encouraged; while an increased attention should

be paid to the mode of communicating the disease, as well as to its after course; and if the opinion advanced a few pages back be correct, the operation should be repeated till the system has been brought fully under the influence of the disease.

ART. IX. NOTE *on the* VARIOLOID DISEASE *as it appeared in the winter of* 1823–4 *in the City of New-York:* addressed to Dr. J. W. FRANCIS, by W. J. MACNEVEN, M. D. Professor of Chemistry, &c.

DEAR SIR,

THE most important fact concerning the nature of varioloid that comes within my own knowledge, is, that I have propagated from it a genuine small-pox.

During the last winter, Mr. L., a pupil of mine, caught the disease at a source that affected a great many of the students of our College. It began with considerable violence; strong chill, weariness and faintness, redness of the eyes, severe pain in the head, quick, strong pulse, with every mark of considerable febrile excitement. As he had been vaccined in his infancy by the late Dr. Richard S. Kissam, so deservedly eminent in his time, I was doubtful whether I should consider him ill of the varioloid, until at the end of the third day a number of bright red spots made their appearance on his forehead. In three days more they were all over his body, distinct and numerous. About the ninth day they had filled, and had shrivelled and desquamated by the thirteenth. Three more in the family had the disease and two escaped it, all of whom had been vaccined by Dr. Kissam.

It was the sixth day when I took lymph from one of the pustules on Mr. L., and inoculated with it a healthy boy about five years old, who had never been vaccined or inoculated before. He sickened on the seventh day following, had much fever, succeeded by an abundant, distinct eruption, and

a regular benign small-pox, that passed through all the usual stages.

The mother of Mr. L. had been inoculated with small-pox in her childhood, forty years before this time. She had then the inoculated small-pox favourably but fully, as I learned from her mother still living. Here then, in the same family, four who had been vaccined by a distinguished and able practitioner, and one who had been inoculated with small-pox, which she took, were nevertheless infected by the prevailing varioloid. But as neither vaccination nor inoculation altogether kept off this variety of small-pox, each of them was, however, equally successful in lessening its virulence and danger. When I consider those cases and many others I have seen of the same nature, and compare them with the effect of the epidemic on constitutions unprotected by previous vaccination, I have the strongest conviction of the preservative effects of the latter.

Several cases of natural small-pox came under my observation during the season, which terminated fatally, that did not begin with more fever, nor proceed for a few days with more violence than some cases of varioloid, while I have seen no death from the latter, nor do I know of any.

Though I am fully satisfied that the disease in question was a real small-pox, and where it attacked unprotected constitutions, a very malignant one, I see no inconvenience, but rather an advantage in assigning to it the name of *varioloid* in all instances of previous vaccination. It is then greatly mitigated. It may be deemed a variety constituting *mild variola*, scarcely, if at all, endangering life or productive of deformity.

Yours, &c. W. J. M.

Art. X. A Case *of* Hydrocephalus. By J. Smyth Rogers, M. D. of New-York.

The comparative infrequency of recovery from hydrocephalus, where that disease has fairly developed itself, renders interesting every instance of its successful treatment: the subjoined case has an additional claim upon our attention, from the evidence it affords of the power of an article of the materia medica, which, although known to some of the older practitioners, had long been forgotten, and has only been very recently revived and introduced into our country; I mean the expressed oil of the "Croton Tiglium," or, as it is commonly called, the "Oil of Croton." I have not been very minute in the detail of my little patient's symptoms; it may therefore be proper to observe, that I have never seen a more distinctly marked instance of acute hydrocephalus than this: the course of the disease was precisely that which is so accurately and so ably delineated by Dr. Cheyne, in his excellent work on the "Hydrocephalus Acutus," and it was evidently the consequence of an injury to the head from a fall.

On the 10th of April I was requested to see A. M. S. aged about 4½ years. I found her in bed; her face was flushed, her skin hot, her pulse rapid, her breathing corresponding with the state of the pulse, and frequently interrupted by deep sighs: she expressed great disinclination to rise, and complained of pain when her mother attempted to lift her from her pillow; there appeared to be a general sense of soreness about the body, but she pointed to the head as the part which suffered most severely: the pupils were very much contracted, although not exposed to a strong light, and she seemed desirous to lie motionless except when pain in the head caused her to cry out, when her cries were accompanied by a tossing of the body. Her mother stated, that about a fortnight previous to my visit she had fallen down the stairs at school; she was stunned for a short time, but as she soon ceased to complain, she was supposed to have recovered from the accident,

and nothing further was thought of the matter: in the course of a few days however, her mother observed that she appeared less lively than usual; she would frequently leave her play for a moment and lay her head on a chair, as though she suffered pain; towards the evening she became feverish, and through the night rather restless, occasionally sighing, gritting her teeth, and groaning in her sleep: in the course of a day or two more, these symptoms appeared to be rather increased, and she occasionally started suddenly and exclaimed, "O my head." As she appeared to be tolerably well in the day, her mother attributed her complaints to worms, and supposing that they would yield to some simple domestic remedy, she neglected to ask advice. On the 9th of April the child was seized with vomiting, and the stomach soon became so irritable as to reject food almost as soon as it was swallowed: on the evening of this day, the exacerbation of fever was much more severe than it had previously been; she became very restless, frequently starting and making loud complaints of her head. The next morning I was sent for, and found her lying as I have described; her bowels, which had been inactive for some days, had not at all been moved for 48 hours: the application of my hand over the bowels did not appear to cause much uneasiness, but when I placed it over the region of the liver, she uttered loud cries. Under these circumstances I directed that the room should be darkened, and every person not necessary as an attendant upon the child, excluded, that every cause of excitement might as far as possible be avoided: an active cathartic was administered, and an enema prescribed; a large blister was applied between the shoulders, and immersion in the tepid bath was ordered, should the other remedies fail to moderate the symptoms; the diet to be bread and water, in the smallest quantities. An attempt to bleed her, resulted in the abstraction of only a small quantity of blood, not sufficient indeed to have any influence on the disease.

April 13*th*. The antiphlogistic remedies hitherto employed have had little or no effect upon the disorder: she still incessantly complains of her head, and appears much distressed at

any attempts to raise her from the bed; indeed the elevation of her head from the pillow is attended by a great increase of pain, and in almost every instance followed by vomiting; her fever is less violent in the early part of the day, but towards evening the exacerbations become very severe; last night she was delirious. She has had two small evacuations since Saturday, by the conjoined aid of cathartics and enemata; the stools have the peculiar dark green, glairy, gelatinous appearance which is considered by Cheyne as characteristic of the first stage of dropsy of the brain, and to which he applies the term "Hydrocephalic." Veins were opened in each arm in succession, but only three or four ounces of blood were obtained: the following purgative was then directed,

Pulv. Rhei. gr. viij.
Calomel gr. vj. M.

to be repeated every four hours until free evacuations should be produced; blisters to be applied to the ankles, and immersion in the tepid bath repeated in the evening.

April 14th. The symptoms continue unabated. She was again delirious through the night; the warm bath seemed to produce a little moisture on the skin, but it soon disappeared. A scanty evacuation took place, having the same appearance as before; the stomach continues so irritable, that the medicines are retained with great difficulty; pain in the head not at all diminished; the tenderness about the region of the liver still so great that she screams out if the hand be applied to the part; she desires to remain quiet, but answers readily and rationally any questions put to her.

Cupping glasses were applied to the temples, and from ℥vj. to ℥viij. of blood abstracted; a blister was placed over the right hypocondrium, and the following cathartic directed;

Pulv. Rhei. gr. x.
Calomel gr. viij. M.

to be repeated every four hours, aided by an injection of pulv. aloes ʒj. diffused in warm water, and employed about an hour after the powder. The use of the tepid bath to be continued.

April 15*th*. The child has passed a still more distressing night than before; a great increase of the fever took place about nine o'clock last evening; she was at times delirious; occasionally she dozed, but almost immediately on closing her eyes she would start, and cry, "Oh my head." The blister had vesicated; the powders and injections were repeated according to directions, and had the effect of increasing somewhat the quantity evacuated, but its character remained as before. She was placed in the tepid bath in the evening, and kept in it until she fainted; a diaphoresis succeeded, but it was of very short continuance, soon giving way to febrile excitement. The jugular veins were now opened, and a small quantity of blood obtained: her extreme restlessness, however, as before, prevented the abstraction of as much as was desired, and little advantage was gained by the operation. A blister was again applied to the back of the neck, and the following prescription made:

P. Rhei gr. xii.
Calomel gr. x. M.

Repeat every third hour, and aid the alternate doses by the following enema:

Spts. Turpentine ʒi.
Thin Starch ℥iv. M.

Warm bath to be repeated as before.

April 16*th*. The remedies were given as directed: the blister vesicated, and two evacuations were produced by the remedies more copious than the preceding, but of the same dark green, glossy aspect as in the former instances; the child passed a miserable night, the unfavourable appearances were not at all changed. This morning her skin was not quite so hot as yesterday; she was lying with her eyes half closed, taking no notice of what was passing around her, but very much distressed, when in the least disturbed; her breathing was frequently interrupted by sighs, and her mother stated that she was constantly complaining of her head. The general appearance of the patient, the state of the pulse, and her other symptoms were so unfavourable, that the case was consi-

dered almost desperate. I determined, however, to try the effect of oil of croton, with a hope that it might produce evacuations, and at the same time act as a counter-irritant by its powerful effect upon the bowels : the following prescription was therefore made :

Ol. Crotonis gr. v.
Medullæ Panis q. s. M. Ft. pil. x.

Of these, one is to be given every two hours, until the bowels are freely evacuated ; the warm bath to be repeated as before.

April 17*th*. The pills have been taken regularly according to directions ; the child has had two motions, more copious than any since the attack, but still having the hydrocephalic character ; the warm bath was used during the evening, and she passed the night rather more comfortably than she had done for several days.

Ol. Crotonis gr. x.
Medullæ Panis q. s. M. Ft. pil. x.

One to be taken every two hours.

April 18*th*. The pills have again caused two evacuations, which have been larger than those of the day before, but their appearance is unchanged ; the irritability of the child's stomach renders it difficult for her to retain the pills, although they are very small ; once or twice they were rejected, but the mother repeated them until they remained by her. She passed a restless night, but appears better this morning than she has been for a week. Let her take two pills every second hour as before.

April 19*th*. Two very copious stools were produced yesterday ; the first did not differ in appearance from those of the day before ; the second, however, was much more natural in every respect ; the child passed a comfortable night, and is considerably better this morning ; she still complains of her head on the slighest effort ; her general aspect however is much more favourable ; her pulse is nearer the natural standard than it has been for some time, her stomach too is more retentive. Continue the pills every fourth hour.

April 20*th*. The evacuations are now quite natural in ap-

pearance, and the patient decidedly better in every respect. Let her take but *one* pill every four hours, and when the bowels have been freely moved twice or thrice, omit the medicine.

From this time, my little patient became convalescent: as her symptoms assumed a more favourable character, the "oil of croton" was gradually discontinued; the bowels in the course of two days became sensible to the mildest aperients; a small dose of magnesia, repeated twice in 24 hours, operated moderately, and prevented any *return* of the excitement, which had entirely disappeared; she was however so much weakened, that she was unable to stand alone for some time; a moderately tonic course was very cautiously resorted to, with great advantage, and her health gradually returned. The still remaining tendency of the head to disorder, was evinced in an attack of intermittent fever, which occurred a short time after she had returned to her usual amusements; the paroxysms were soon arrested by the sulphate of quinine, but every night during their continuance she suffered from acute pain in the head. She is now perfectly well, and has the appearance of an uncommonly healthful child.

After A. M's. recovery from the attack of hydrocephalus her mother inadvertently left a paper containing *seven* pills, each having a drop of ol. crotonis, within the reach of a younger sister, aged about three years: the child swallowed the whole of them, before the mother could interfere; in *ten minutes* most violent purging took place, it continued at intervals for some hours, until the child was so completely prostrated that she could not raise her hand to her head: from this exhaustion she recovered without any ill consequences, by the aid of mucilaginous and nutritious diet.

Art. XI. On *a* new Form *of the* Galvanic Apparatus: By Robert Greenhow, M. D. of New-York.

Every one who has been in the habit of making galvanic experiments must be aware of the numerous inconveniences which attend every form of the apparatus hitherto in use. If it be arranged according to Cruikshanks' plan, it is impossible to keep the cells tight, and the action begins to decline before they are filled. In the other way, if the troughs are made of wood with glass partitions the same defect occurs; if of porcelain, they are very expensive and brittle. In Dr. Hare's deflagrator, intense heat and light are the only effects produced.

After some consideration, I have at last fixed upon a plan, which, in my opinion, completely obviates these difficulties.

In it the copper is doubled around on Dr. Wollaston's plan and soldered up at the sides, so as to form a small vase, about half an inch wide, in the middle of which the zinc is placed, secured from contact by pieces of varnished wood. A number of pairs thus arranged are suspended from a common support of wood, the zinc in one cell communicating, in the usual manner, with the copper in the next, by a metallic arc. When they are used they are simply to be immersed in any vessel (a common wooden trough, lined with cement, without partitions,) containing the bath, and lifted up again, when it is evident they will be in action, and more completely insulated than they can ever be by any other means. We have only to pour the liquor out when we wish to suspend the operation. It combines every advantage: it is cheap, durable, and not liable to be put out of order: it is easily cleaned and most easily used.

Fig. 1. represents one of twenty pair of plates which I have constructed, which will be better understood by first examining fig. 2. (the letters of reference are the same in both,) which represents an end view of the plates.

Dr. Greenhow's Galvanick Apparatus

Fig. 1.

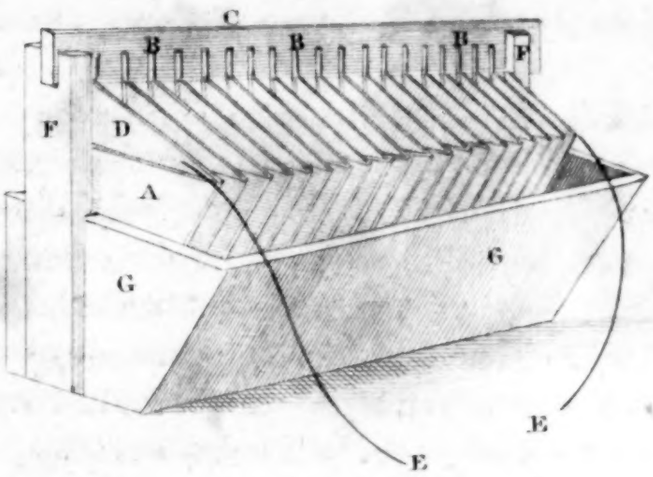
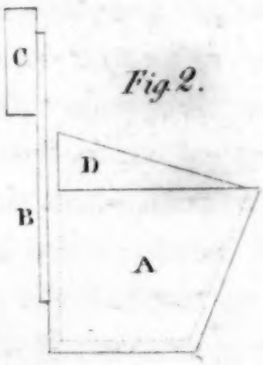


Fig. 2.



A is the cell of copper, five inches and a half wide at the top, four at the bottom, four and a half high, and half an inch wide; to one end is soldered the strong iron wire B, by which it is suspended from the wooden bar, the end of which is represented by C. The wire is flattened at the top and has two holes bored in it to admit screws.

Fig. 1. represents the whole apparatus in action.

The cells of copper A, with their respective zinc plates D, are attached to the bar C, by the wires B. G is a wooden box eight inches wide at top, six at bottom, and six deep, at either end of which are two wooden supports F, with each a notch at the top to admit the ends of the bar. When we wish to suspend the action, we have only to lift the bar out of the notches, and pour the liquor back into the trough.

It may be used as a deflagrator by suffering the plates to remain immersed in the fluid, and its burning powers are then increased. I have put it in action several times in the presence of Professors Macneven, Renwick, and several other scientific gentlemen, all of whom concur in their approbation of it. When charged with only a weak bath of muriatic acid, it decomposes water with rapidity, and burns charcoal in a most brilliant manner. Since I have made this I have devised a plan for rendering any number of plates easily manageable.

Art. XII. Account *of a Series of* Galvanic Experiments *on the dead body of* John Johnson, *murderer*. By F. G. King, M. D. of New-York.

The singular accident which occurred to Galvani, in his experiments on frogs, directed the attention of physiologists to the subject of animal electricity, which has at different intervals since that period been made the subject of either unbounded credulity or unmerited scepticism. The brilliant experiments and singular results of Valli, Aldini, Fowler,

Volta, and others, gave character to it for a time, but it soon fell into disrepute, and became like animal magnetism the laughing-stock of the profession.

Thus it continued until within a very recent period, when the attention of naturalists having been strongly called to a peculiar organization in certain animals, as the torpedo, silurus electricus, &c. very analogous to the voltaic pile, and productive of similar effects, animal electricity again attracted notice, and was made the object of direct experiment on man, for the purpose of ascertaining how far it might be useful as a remedial or curative agent in the hands of medical men.

Professor Sœmmering and Baron Larrey, both engaged actively in the inquiry ; the latter of whom furnished a memoir to the Philomatic Society, in which he proposed galvanism as a remedy in paralysis ; though a few years after, in his Military Surgery, he states that the unimportant advantages since derived from it have led him to renounce his proposition.

Humboldt instituted numerous peculiar experiments, many of them tested on himself, for the purpose of proving the similarity between galvanic and vital action. The French Institute in 1798 appointed a committee of their scientific men to examine the question, and their report is a most elaborate record of the history and controversies on this subject, elucidated by experiments both novel and interesting.

Curious details of similar experiments are also to be met with in Dr. Sue's History of Galvanism ; whilst Wilkinson, another of its historians, goes so far as to maintain that there is a similarity in structure between the cellular arrangement of the human lungs and the organization of the torpedo ; and consequently, that respiration is an important galvanic operation : from which deduction he is of course led to apply galvanism in all cases of suspended animation, whether by drowning or hanging : its effects being illustrated by the case of Forster, who between five and six hours after execution was submitted to the action of galvanism, which produced

such results as led many practitioners present to believe that even at that late period a recovery might by perseverance have ensued.

Subsequent to this, the singular experiments of Wilson Philip have appeared; as also the account, by Dr. Ure, of the phenomena developed on the galvanic excitation of Clydesdale's body. The singularity of this case having excited the curiosity of the profession on this side the Atlantic, they hastened to embrace the opportunity offered by the execution of the murderer Johnson on the 2nd of April, 1824, to verify the exactness of Dr. Ure's statement. Accordingly the necessary arrangements having been made, the afternoon of April 2nd was employed in developing these peculiar phenomena. * The anatomical part was executed by Drs. Mott and Stevens, with their accustomed precision and skill: the batteries consisting of 328 pairs of four inch plates, prepared under the direction of that able chemist, Prof. Macneven, were applied by Messrs. Griscom and Harris, in the presence of the Trustees of the College of Physicians and Surgeons, and a number of other gentlemen.

A few moments before the body was brought into the College Hall, the batteries were charged with diluted nitro-sulphuric acid, and the poles were connected to leaden wires, armed at their extremities with platina. The body was that of a well-built athletic man, which after being suspended about fifty minutes, and undergoing some slight delays, was brought to the room in one hour and a half from the moment of execution.

The limbs were flexible, and a little cooler than the trunk, which had preserved its natural temperature. It was stripped and immediately placed upon the table, when the following experiments were instituted.

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* Drs. Mott, Stevens, and Macneven, were the Committee appointed by the Trustees of the College of Physicians and Surgeons, to superintend the galvanic experiments in this case. *Ed.*

Exp. 1. An incision was made under the tendo achillis of each side, which being armed with tinfoil, were connected together by means of a copper wire having communication with the negative pole of the battery, whilst the positive pole attached to a brass ball, was introduced into the mouth, previously moistened with a saturated solution of sal ammoniac. The whole body was immediately thrown into convulsive agitation, his limbs lashing the table at every successive shock, and his jaws closing spasmodically, champed along the wire as a restless steed upon his bit. Satisfied by this of the energy of the agent, it was deemed proper immediately to make attempts toward the restoration of respiration, accordingly,

Exp. 2. The phrenic nerve was laid bare by an incision on the outside of the sterno-cleido-mastoidœus muscle, midway between the angle of the jaw and clavicle, and a blunt probe passed beneath it whilst another incision was made under the cartilage of the seventh rib of the same side, in order that the animal arc might be completed by a communication of the negative pole with the great head of the diaphragm, the positive wire being applied to the phrenic nerve. The chest immediately was thrown into action by the contractions of the diaphragm; but it was not sufficiently marked to warrant the assertion that it resembled full respiration, which was perhaps attributable to this circumstance, that the cavity of the thorax had been opened into, by which the action of the diaphragm must necessarily have been much impeded.

Exp. 3. The supra and infra orbital nerves were exposed, directly where the trunks make their exit from the bones of the cranium and face, and being armed with the positive wire, whilst the negative was applied to the connexion already mentioned between the tendines achillis, the muscles of the face instantly commenced the most varying and frightful play of expression possible. The eyelids were raised and lowered, the mouth contorted in every direction, the lips at times writhing as in agony, and then again subsiding into a fearful hurried smile, momentarily broken in upon by anxious quiverings and twitchings, as the shocks passed successively over them.

Exp. 4. The positive wire being applied to the brachial plexus, and the negative to the radial nerve at the wrist of the same side, as also to the ulnar nerve, the arm was thrown with violent extension in different directions; the fingers coiled in and clenched the hand with so much force, that the finger of a gentleman present having been placed within the hand, he was enabled to raise the arm from the table by its grasp alone. A small incision having been made at the end of the index finger, and the wire applied, it was suddenly extended as in the act of pointing.

Exp. 5. The thorax was now opened, and the positive wire applied to the great sympathetic nerve and par vagum, whilst the negative was placed upon their filaments about the heart, when the right auricle and ventricle were seen to act, the former more distinctly than the latter: and it was not a little singular to observe the effect of the same agent on muscular fibres of different arrangement; for in the flexors and extensors of the limbs it had produced sudden and violent spasmodic action, but on the circular and irregularly radiated fibres of the heart the action appeared more natural, and there was a gentle vermicular motion, or rather a rising and falling of its fibres, as if they did not all act at once, but rather separately and individually, as one ceased the other taking on its action.

Exp. 6. The radial nerves being connected, the one to the positive, the other to the negative wire, the hands were violently clenched, and the heart also was observed to act slightly but not as distinctly as in experiment 5.

Exp. 7. A metallic instrument was thrust through the cervical vertebræ, between the second and third, and was connected to the positive wire, the negative pole being directed to the communication between the tendines achillis. The whole body was violently agitated by constant tremor, and on the legs being flexed, they were thrown out with great violence; but the energy of action was much diminished from the rapidity with which the body was now cooling.

Exp. 8. The anterior crural nerves were exposed, as they pass out from the pelvis, and connected with the positive wire,

the negative remaining as before: the limbs were much agitated, and on being flexed were thrown out with violence, the first effect being to bring them into powerful adduction.

Exp. 9. The two poles were connected to the two ulnar nerves, and the effects were nearly the same as in exp. 6. the heart also acting, but with less energy.

Exp. 10. The positive wire was applied to the par vagum in the neck and to the left phrenic as it crosses the pericardium, when the heart was thrown into distinct action, which was increased by adopting Dr. Ure's expedient of passing the negative wire over the plates of the battery.

Many other minor experiments were attempted, but as the body was nearly cold, for nearly two hours had been consumed, their effects were too slight to notice.

The intestines on being exposed, displayed a most rare and beautiful view of the lacteals gorged with their contents, ramifying in delicate mesh-work over many parts of the mesentery: nearly a teaspoonful of their fluid was collected, and it is to be regretted that, from the hurry of the experiments, sufficient opportunity was not afforded for examining, under such favourable circumstances, the exact manner in which they open from the intestines.

It will be perceived from the above that Aldini and Volta were in error, when they assert that the heart, in common with all the involuntary muscles, is not susceptible of galvanic influence; and that Fowler and Vassali are correct in their observation of the heart's motion. But we could not ascertain how far the statements of Humboldt and Carpul are correct in ascribing similar actions to the intestinal canal, although there is every reason for placing full reliance on their assertion.

REVIEW.

ESSAYS *on various Subjects of* MEDICAL SCIENCE. By DAVID HOSACK, M. D. F. R. S. L. & E. Professor of the Theory and Practice of Physic and Clinical Medicine in the University of the State of New-York, &c. &c. Two vols. 8vo. pp. 380 & 472. New-York. 1824.

THE volumes before us contain a collection of the various writings and publications of one of our most distinguished medical men, from the year 1794 down to the present day. We need scarcely say that we have been much gratified by their appearance, and that they furnish, in our opinion, a most decisive and honourable proof of the zeal, ability, and success with which their author has devoted himself to the cultivation of medical science, during a long and prosperous career of professional distinction. In expressing these sentiments concerning the general value of the present Essays, we do not wish to be understood as approving of every thing contained in them. On the contrary, with regard to some of the more important doctrines inculcated by our author, we have the misfortune to differ entirely from him in opinion. In an especial manner is this the case in relation to almost the whole of his theories concerning contagion in general, and particularly as appertaining to yellow fever.

On the latter of these subjects we have so recently stated our views*, that we shall not at present resume the considera-

* Vol. II. p. 472.

tion of it. Upon contagion generally, and our author's classification of contagious diseases, we shall, however, take the liberty of making a few remarks.

Essay No. X. *Observations on the laws which govern the communication of Contagious Diseases.* Vol. I. p. 253. This paper was originally addressed to Dr. Chisholm of England, in 1808, and the object of it was, as stated by our author in a subsequent paper, "if possible, to narrow the ground of controversy upon the important and much contested subject of contagion. This" he "endeavoured to do, first by showing that the distinction which had been proposed by some writers, between contagion and infection, was unnecessary and fallacious; secondly, by dividing all diseases which are contagious, infectious, or communicable from one person to another, into different classes, according to the several laws which appear to govern their communication." Vol. I. p. 265.

Dr. Hosack, accordingly, divides contagious diseases into *three* classes, each of which he asserts to be governed by laws peculiar to itself.

The *first* embraces "those which are communicated *exclusively* by contact."

Under this class are embraced the itch, syphilis, the laanda of Africa, framboesia or yaws, elephantiasis or leprosy, hydrophobia, and the vaccine virus.

"Neither of these diseases," according to our author, "can be communicated in any other way than by *contact*; they are therefore *contagious* diseases, in the strict etymological sense of the term. It is also to be remarked, that these diseases are never conveyed through the medium of the *atmosphere;* actual contact alone can communicate them from one person to another. These diseases" he adds, "acknowledged by all to be contagious, and so denominated by all writers, have a law of communication peculiar to themselves."

The *second* class consists of those diseases which, according to Dr. H. "are communicated both by *contact* and by the *atmosphere.* This class comprehends small-pox, measles, chicken-pox, hooping-cough, scarlet-fever, and cynanche ma-

ligna. "These are communicated under different circumstances, and governed by *different laws* of communication" from those of the *first* class.

The *first law* of this class is, that "contact, or the *close approach* to the sick labouring under these diseases, will communicate them to those who are susceptible of their influence—but they are no less communicable through the *medium of the atmosphere*. A *second law*, which governs the communication of this class of contagious diseases, is, that they are communicable in *every season*, in the heat of *summer*, as well as in the cold of *winter*—in a *pure* as well as in an *impure* air, though more readily by the latter than the former. A *third law* of communication in this class of diseases, is, that the persons afflicted with them are not generally susceptible of a second attack. I say *generally*, because exceptions are related upon very respectable authority.

"This second class of contagious diseases is, therefore, abundantly distinguished from the first; but they are still associated by most medical writers under the same head of contagious diseases, without assigning to each class its discriminating characters." Vol. I. p. 257.

Our author's *third* class of contagious diseases includes plague, yellow fever, typhus, and dysentery. This like the two former classes is said to have "a law peculiar to itself, i. e. the diseases composing it are communicable, or otherwise, depending upon the *condition of the atmosphere* in which they occur or are introduced." Vol. 1. p. 259.

"In a pure air, in large and well ventilated apartments, when the dress of the patient is frequently changed, all excrementitious discharges immediately removed, and attention paid to cleanliness in general, these diseases are not communicated, or very rarely so, from one to another. But in an *impure* air, rendered so by the decomposition of animal and vegetable substances, as takes place in low marshy countries, or by concentrated human effluvia, as in camps, jails, hospitals, or on shipboard, they are rendered not only extremely malignant and mortal in themselves, but become commu-

nicable to others who approach the sick, or breathe the same atmosphere, which has become *assimilated* to the poison introduced, insomuch that *the same specific disease* is communicated, whether it be the *plague*, *yellow fever*, *typhus*, or *dysentery*." Vol. I. p. 258.

We have given the preceding ample analysis of our author's classification, in order that the objections that we have to urge against it may be the more intelligible to our readers. These we shall now proceed very briefly to state.

We are not quite sure that we perfectly understand Dr. Hosack's meaning, when he uses the word *contact* as applied to his first class of contagious diseases. If he means the actual contact of two living bodies, then we must object to the principle of his classification as not founded on fact; because in none of the diseases under this head is such contact at all necessary for their communication. Neither syphilis, hydrophobia, the vaccine virus, nor any other of the diseases alluded to, require for their propagation any thing more than the application of the respective virus of each disease to the subject to whom such disease is communicated. It is well known that all of them may be communicated by inoculation, and therefore it is self-evident that actual contact with a body labouring under the disease is not at all necessary. This, therefore, we take it for granted cannot be our author's meaning when he speaks of them as being "*exclusively* communicated by contact." If, however, Dr. Hosack intends by the language he uses merely the contact of the contagious virus with the living body, then it does away entirely the whole of his distinction between his first and second classes, for in what other way can small-pox, measles, &c. prove contagious, except by the immediate contact of the causes of these diseases with the bodies of those in whom they are developed? The truth is, that no disease can possibly prove contagious unless such contact takes place. The only difference between the communication of syphilis and measles, for instance, is, that the poison of the first existing in a liquid form, cannot of itself act at any sensible distance from the diseased body. It may, however, by

the artificial means of inoculation, be made to act and produce its specific effects at the remotest distances. The poison of the latter, (i. e. measles,) on the contrary, being gaseous, diffuses itself spontaneously into the surrounding atmosphere, and thus produces its effects at greater or less distances from the diseased body. In both cases, however, the principle of their communication is precisely the same. In both it is only necessary that the person to whom the disease is communicated should come in contact with the *contagious poison* producing it. In neither is it at all necessary that he should come in contact with the *diseased body* of an individual labouring under either disease.

The remarks just made will be found of universal application to every disease that can be considered as contagious; and they are designed to show that no disease can possibly be communicated from one person to another, except by actual contact of the contagious virus with the living body. We must therefore consider as erroneous any classification which assumes a different principle as its basis.

Let us proceed, however, to examine some of the other points of distinction between the two classes. "A *second law*," says Dr. H. "which governs the communication of the second class of contagious diseases, is, that they are communicable in *every season*, in the heat of *summer*, as well as in the cold of *winter*—in a *pure*, as well in an *impure* air, though more readily by the latter than the former." With what shadow of reason or propriety this law can be said to distinguish the diseases of the two classes, we confess ourselves at a loss to imagine. Is not itch, syphilis, and every other disease ranged under the first class, communicable in *every season*, in *summer* as well as *winter*—in *pure* as well as *impure* air? Are they not, in fact, much more independent of all these external circumstances than those of the second class?

"A *third law* of communication in this class of diseases, is, that the persons afflicted with them are not generally susceptible of a second attack." This law we conceive to be un-

satisfactory, because it applies equally to some of the diseases of the first class.

We come now to the third and last class. To the whole of this class we have to object that it takes for granted the very thing, which of all others should never have been assumed, and that is the *contagiousness* of these diseases. Without entering into any particular examination of the several diseases enumerated under this head, we will simply state that not a single one of them has ever been satisfactorily proved to be contagious, while with regard to some of them the mass of evidence is entirely adverse to this opinion. In relation to yellow fever, more especially, there exists an amount of testimony in favour of its non-contagiousness so overwhelming, that we are at a loss to conceive how any man of judgment and reflection can for one moment resist its influence.

Dr. Hosack himself appears to us to have been fully conscious of the fact, that the contagious character of these diseases was more than doubtful, when he makes the important concession that "in a pure air, in large and well ventilated apartments, when the dress of the patient is frequently changed, all excrementitious discharges immediately removed, and attention paid to cleanliness in general, *these diseases are not communicated, or very rarely so, from one to another.*" In other words, that these diseases, when subjected to the only fair test by which it can be determined whether a disease be contagious or not, are admitted by Dr. H. "not to be communicated, or very rarely so, from one to another." A confession not less creditable to his candour than it is fatal to the cause which he espouses. With what propriety then, we would ask, can these diseases be ranked among those which are denominated *contagious?*

But we will not prosecute this subject any further. Our object was not to enter upon the discussion of contagion, but merely to state the objections which struck us in looking over our author's classification of contagious diseases. We turn with pleasure to other and more important portions of his labours.

Vol. II. Essay V. *Observations on Croup.* This paper relates to a disease which has always excited peculiar interest in this country, and which perhaps more than any one subject connected with practical medicine, has elicited the talents and resources of our American physicians. The observations of Dr. Hosack are the result of very enlarged experience; and we do not hesitate to say, that they are among the most valuable and instructive contributions which have as yet been made on this subject. We proceed to give a brief analysis of them.

Dr. H. divides croup into two species, idiopathic and symptomatic; the former being primarily and exclusively seated in the trachea, bronchiæ, and surface of the lungs; the latter being the consequence of other previous diseases, among which he enumerates cynanche maligna, scarlatina, measles, smallpox, &c. The facts stated by Dr. H. seem to us conclusive with regard to the propriety of the division; and we are surprised, that a late writer should have called in question the fact, that croup frequently occurs as a consequence of other diseases.

By some writers it has been gravely maintained, that croup is a contagious disease. That it may have been so in certain cases where it was the consequence of contagious diseases, as scarlatina and cynanche maligna, is admitted by Dr. Hosack, at the same time that he denies that idiopathic croup is ever contagious. We agree with him perfectly when he makes the following statement: "I should as readily believe that an inflammation of the brain or of the pleura should be thus communicated, as an inflammation of the membrane lining the trachea; and I believe it may be safely asserted that the fact is otherwise. In the numerous families in which I have prescribed for this disease, I have never known it to be thus communicated, either to the attendants upon the sick, or to other children, even though sleeping in the same room, and frequently in the same bed; but I have more than once been called in the same night to two children of the same family, both having been exposed to the same cause, and especially where there is a great predisposition to

attacks of this disease, as is the case in particular families." Vol II. p. 142.

Our author informs us, that he never visited a child upward of twelve years of age in this complaint, except where it had suffered previous attacks of it; at the same time that he admits cases of it having occasionally occurred in adults, and among others adduces that of General Washington. Although we are perfectly convinced that genuine croup may, and does attack adults, yet we are very far from believing that it was the disease which proved fatal to our Washington. On the contrary, the whole history of the case, as recorded by Marshall on the authority of Dr. Dick, proves it to have been purely a disease of the larynx, * at present known under the name of cynanche laryngæa.

It is well known, that by some highly respectable writers on this subject, croup is divided into two species; the inflammatory and spasmodic: as the result of his very extensive experience during thirty years in this city, Dr. Hosack informs us, that he has "never met with a single instance in which it assumed the spasmodic character unaccompanied by symptoms of local imflammation." Vol. II. p. 146.

This is a most important fact, and leading to conclusions of the utmost consequence in the proper management of this formidable disease. It shows the absolute necessity of meeting it in its very onset with prompt and decisive measures, instead of trusting to the temporizing prescriptions ordinarily resorted to for the removal of spasm. Our author's remarks on this point are entitled to the most serious consideration.

In the treatment of croup, Dr. Hosack divides the disease into *three stages:* a division which strikes us as not merely happy in itself, but leading to the most correct and philosophical views of the nature of the disease, as well as of the method of treating it successfully.

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* Marshall's Life of Washington.

"I have been led at the bed-side to distinguish three distinct stages in croup: the first may be denominated the *forming* stage of the disease; in this the affection is local; the irritation has not yet extended to the whole system; the child even sits laughing and playing upon the lap of its mother, manifesting a very unusual but morbid degree of exhilaration; its skin is cool and moist, its pulse not perceptibly accelerated; but its hoarse hollow sounding, and frequently returning cough, its wheezing inspiration, its restlessness, and especially its cries after a fit of coughing, all denote to the physician and parent acquainted with the disease, the consequences that will soon ensue, if active means be not employed to prevent the second, or *febrile* stage. In this stage the whole system partakes of the irritation; the pulse is frequent, the skin hot and dry, the respiration hurried, the tongue covered with the usual white fur indicative of inflammation, the lips and cheeks remarkably florid, the cough frequent, but attended with a more acute sound than that of the first stage; every inspiration too is attended with more uniform wheezing than that which appears in the first, when occasionally an interval occurs in which the child breathes as if in health. But in this second stage no such interval is perceived; the trachea, bronchia, and lungs, become so surcharged by the circulating fluids, that the child has not even a momentary relief from its oppression; and in a short time, if left to itself, especially if the patient be plethoric, the countenance exhibits a purple, livid colour, not unlike that of apoplexy, and is even attended with a degree of stupor, or propensity to sleep. This loaded state of the lungs and interruption to the free return of blood from the head I have frequently witnessed in this stage of croup: if the patient be now neglected, or the evacuations be sparing and insufficient, an effusion from the exhalent vessels opening into the windpipe, bronchiæ, and surface of the lungs, inevitably takes place. In the two former, the effused matter assumes a membranous appearance, probably owing to the forcible passing and repassing of the air through those preternaturally constricted tubes; but in the lungs themselves it appears in the form of a viscid fluid, partly resembling both phlegm and pus. When this effusion has actually taken place, the febrile symptoms sensibly abate, and sometimes disappear altogether; the child is also apparently free from pain, but it suffers violent paroxysms of cough and difficult breathing, attended with an irregular and spasmodic respiration, as in asthma, or dropsy of the chest, and with similar intervals of ease. These paroxysms, in young children, continue but a few hours before dissolution. But in children arrived at eight or ten years of age, they frequently continue several days. A daughter of Gen. Morton, whom I saw in consultation, continued to struggle with those painful paroxyms at least four or five days after the febrile stage had terminated, and the effusion of matter, constituting the membrane, was supposed to have taken place. In some cases the impediment to inspiration, and the distress attending the paroxysms are so great, that the only position in which the patient can respire, is with the head thrown back. In this situation the

trachea is extended, and thereby its capacity increased, and adapted to the membrane which it encloses. In some instances before death, general convulsions ensue, which speedily terminate the sufferings of the patient. This stage, in which the membranous effusion so frequently takes place, I denominate the *membranous* or *purulent* stage: from this advanced state of the disease recovery is so rare, that it is not to be expected; it might almost be denominated the fatal stage of croup. These distinctions it is, in my opinion, important for the practitioner to keep in view, as they lead to important conclusions in practice." Vol. II. p. 149.

When called to a patient labouring under the *first* stage just described, our author's practice is to give an emetic, composed of tartarized antimony, and ipecacuanha, in the proportion of one to two grains of the former, and of five to ten of the latter, for a child under ten years of age. This dose is repeated every fifteen minutes, until it operates to such a degree, as to induce a plentiful secretion from the trachea and lungs. If this object can be accomplished, the disease is generally removed at once. Should the disease continue, and run on to the *second* stage, characterized by great general excitement, as well as local determination, more energetic measures are called for. The first of these is venesection. In a child under two years, Dr. H. recommends from two to four ounces to be taken; and in a child from two to six years, from four to six or eight ounces to be repeated as circumstances may require. Concerning the part from which blood should be drawn, our author makes the following observations.

"As I have never, even in the youngest children, experienced any difficulty in opening a vein upon the back of the hand, and of drawing a sufficient quantity of blood from that part, especially after immersing the hand a short time in warm water, I have never had occasion to open a vein in the neck; and as the child is generally very restless in this disease, and there is on this account more hazard in opening one of the jugular veins than those on the back of the hand, I have uniformly preferred the latter. It is also preferable on other accounts: it is difficult to ascertain the quantity of blood drawn from the jugular; the vein cannot be so readily closed, and the orifice is apt to open afresh by a violent fit of coughing." Vol. II. p. 154.

Blood-letting having been premised, emetics, the warm bath, blisters to the throat, calomel in doses of from five to ten grains every two hours, until it operates on the bowels, solu-

tion of tartar emetic, &c. are successively used according to the nature and urgency of the symptoms.

In the *third* and last stage of the disease, when effusion has actually taken place in the trachea, the sole object is, if possible, to remove the effused membrane, by means best calculalated at the same time to support the waning powers of the system. For this purpose, Dr. H. recommends calomel in small and repeated doses, squills, the syrup of onions, seneka snake root, ammoniac, assafœtida, the vapour of vinegar and water, and the vitriolic emetics of zinc and copper.

With regard to the use of the vitriolic emetics, we would merely state, that we think our author has assigned to them their appropriate place in the management of croup. If ever useful in this disease, they must be so after all inflammatory action has been subdued, and in that stage we look upon them as articles of great value. The practice of Dr. Hosack has been followed with success by one of the editors of this Journal, as may be seen by a reference to our last number.

Essay VI. *Observations on Glossitis.* Inflammation of the tongue is a disease of very rare occurrence, and has been noticed by very few writers. Dr. Hosack records two interesting cases of it which fell under his own notice.

Case 1. In this case the disease was owing to imprudent exposure to cold on the part of the patient while heated. Shortly after he became oppressed with a considerable degree of soreness about the throat. On the third day succeeding this, his symptoms are thus described :

"His tongue now began to swell, and in a little time became so much enlarged in all directions, that it pressed against the roof of his mouth, and was even protruded beyond the teeth. In this situation he was unable to close his mouth, could not articulate, and was obliged to hold communication by writing. His swallowing too was attended with much difficulty and distress.

"Not only the tongue, but the sublingual glands and those at the root of the tongue, with those of the neck and jaw, all became very much enlarged ; his whole neck from the jaw to

the clavicles became very much distended, hard and almost unyielding to pressure." Vol. II. p. 182.

Blood-letting was immediately recommended by the physician first called, but was resisted by the patient. Purgatives, a blister to the back of the neck, and gargles were resorted to, without however any effect in subduing the disease.—"His symptoms all increased in violence, his oppression was now so great that he was unable to lie down." On the seventh day after the attack, a tumour was discovered under the tongue indicating suppuration, which on being lanced discharged a small quantity of very offensive matter. After this an abatement of the swelling took place; the tongue also became cleaner and of a more natural colour. On the succeeding day symptoms of congestion of the brain made their appearance, as coma and occasional delirium. For the purpose of relieving the pressure upon the brain twelve or fourteen ounces of blood were now drawn and a cathartic administered. These means succeeded in relieving the affection of the brain. In other respects the patient did not improve. Great restlessness and difficulty of breathing came on and continued to increase until his death, which took place on the ninth day after the attack. The termination of this case presents something remarkable. Dr. Hosack states, that during the whole evening and night in which the patient died, "he continued to walk from one chamber to another and from thence through the hall; his muscular powers remained unimpaired until within a very few minutes of his dissolution: analagous to those cases of yellow fever, in which the patient may be almost said literally to walk to his grave."

Case 2. "Gilbert Jerault, a stout man, aged about thirty-five, was admitted into the hospital June 10th, 1822, for an irregular febrile attack, which, (as it appears by a reference to the prescription book in use at the time,) was treated by laxatives and diaphoretics. By the use of these means he shortly recovered.

"This man had an enlargement of the lower jaw and tongue to such an extent as somewhat to impede speech. This deformity had arisen from a severe salivation, induced one or two years before from some idiosyncrasy of system or improper exposure while under a course of mercury for the

cure of syphilis. The disease had been cured, but this chronic enlargement remained. After he had recovered from the fever for which he had been admitted on the 10th, owing to taking cold or some other cause, he was attacked with general febrile symptoms, immediately followed by an extraordinary swelling of the tongue, causing it to protrude from the lips upwards of an inch, and so filling up the posterior fauces as greatly to obstruct respiration. The progress of this enlargement was very rapid, not exceeding eight or ten hours from the time he first began to perceive it, till he sent for me on account of his difficulty of breathing. On seeing him, his face was flushed and turgid, and there was much action in his pulse. He was immediately bled to between thirty and forty ounces, deep scarifications were made in his tongue with a scalpel, a blister was applied to the throat, and antimonials and salts were administered: though I do not remember whether they were given to such an extent as to produce vomiting. These means were used almost simultaneously, and they produced immediate relief. The bleeding, scarifications, and antimony, must here deserve the credit, as the relief was too sudden to have been at all effected by the blister or cathartic. By the continuance for a few days of the antiphlogistic treatment, the tongue was reduced to its previous size." Vol. II. p. 189.

Essay XI. *Observations on Gout.* Concerning the disease which forms the subject of this paper, Dr. Hosack has come to the following conclusions:

"1st. That gout is not an hereditary disease in the sense in which it is usually considered; that it is only hereditary as far as fortune, and its attendants, ease, indolence, luxury, habits of intemperance, both in eating and drinking, and that predisposition which arises from a strong and vigorous constitution, are hereditary. Accordingly, it is observed by Hoffman, that "many have lost their gout with their fortunes," being compelled to obtain their subsistence by the sweat of their brow. Similar facts are related by Van Swieten and Schenkius. Hence too females, who rarely indulge in the excesses either of the bottle or the table, are as rarely the subjects of this disease; and when so, it is usually after the cessation of the menses, and is then, for the most part, induced by the excessive use of wine or ardent spirits. The writer has also observed, that in those families where it is pronounced hereditary, that it is uniformly earned by the descendant, and that it is not an exclusive patrimony: accordingly it happens that not only the females, but such of the male members of the same family as lead lives of temperance and industry, escape the disease; for the same reason, gout never appears in early life, except when induced by indolence, intemperance, and dissipation.

"2d. That gout takes place for the most part in the sanguine temperament, in the plethoric habit of body, and is exclusively an inflammatory disease of the whole system, as well as of the part affected.

"3d. That its associates or vicarious diseases, apoplexy, palsy, angina pectoris, asthma, habitual catarrh, eruptions of the skin, obstructed viscera, and dropsy, arise from the same habit of body, and from the same causes.

"4th. That the deposites of saline or earthy matter, which take place upon the joints in gout and rheumatism, in the kidneys and bladder occasioning stone and gravel, in the brain of apoplectics, in the arteries of persons advanced in life, in the coronary vessels and valves of the heart, as frequently attendant upon angina pectoris and other diseases of that organ,* have the same common origin, and that these extravasations are usually the effects of an overloaded state of the blood-vessels.

"5th. That although the same earthy or saline materials exist in the blood in a state of health, and are constantly passing off in our excretions, as appears from the observations and experiments of Scheele, Woolaston, Brande, Pearson, Egan,† and others, they are in no instances the cause of gout; but when deposited upon the joints in that disease, or upon other parts of the body, that such deposites are the effects of plethora, the parent of both.

"6th. That the predisposing causes of gout, in addition to the original vigour of frame, are the excessive use of wine, ardent spirits, animal food, the condiments of the table, and the neglect of the exercise necessary to counteract their effects upon the constitution. While the check of the excretions by the cold of autumn and winter, or the sudden impetus given to the circulation by the returning spring, prove the most usual exciting causes of this disease. Hence we find gout, like rheumatism and other inflammatory diseases, to be the attendants upon autumn, winter, and spring, but rarely to be met with during the summer season, when our diet consists of a large proportion of vegetable food, and the excretions, especially by the surface, are most abundant; hence too, it is observed, that persons who are remarkable for their excessive discharges by the skin, are rarely the subjects of gout, even though the usual causes of this disease are at the same time indulged in to a great degree.

"7th. That as the causes of gout are intemperance and indolence, the best means of preventing this disease may be summed up in their immediate antidotes, temperance and exercise: but where the patient has not resolution to withstand the temptations of the table, and is unable to take the necessary exercise, that occasional evacuation by the lancet, and other means of distinguishing the fulness and excitement of the vessels, should be employed.

"* See Warren's valuable work on the Diseases of the Heart; Baillie's Morbid Anatomy; Burns' observations on Diseases of the Heart; Corvisart on the Heart.

"† Transactions of the Irish Academy."

8th. That the most effectual means of removing the inflammatory action attendant upon the first stage of the paroxysm of gout, consists in depletion by the lancet, cathartics, and such remedies as operate by restoring the excretions from the surface of the body, the physician paying due regard, in the use of these means, to the constitution of his patient, his time of life, and season of the year. That in correspondence with the use of these remedies, both the diet and the regimen of the patient should be simple and strictly antiphlogistic.

"9th. That during the febrile stage of the paroxysm, the part or parts affected should be lightly covered with soft flannel, or carded cotton, for the purpose of soothing the existing irritation, and of promoting a perspiration from their surface; but that both the practice of loading the limb with the accustomed strata of flannel, and thereby of adding to the heat and inflammation of the parts, and that of applying cold water, or other cold applications to the affected limb, are alike prejudicial and dangerous, and are equally to be reprobated.*

"10th. That at the termination of the febrile or inflammatory stage of gout, as of other inflammatory diseases, the same means of restoring the tone of the system are indicated, viz. chalybeates, bitters, the moderate use of animal food, wine, porter, exercise, and in the summer season, sea bathing." Vol. II. p. 233.

ESSAY XIII. *Observations on Tic Douloureux, or Neuralgia.* Dr. Hosack informs us that this disease was noticed by physicians at a much earlier period than is generally supposed. Mention is made of it as far back as the year 1673, when it was described by Ludwig in the Miscel. Nat. Cur. under the title "De dolore superciliare acerbissimo." By English physicians the disease was scarcely known until 1776, when Dr. Fothergill gave a good account of it under the appellation of a painful affection of the face. By most writers this disease has been considered as seated exclusively in the nerves of the face, more especially in the second branch of the fifth pair, or in the portio dura of the seventh. Mr. Abernethy, Sir Everard Home, and others, however, have related cases in which it has assailed the nerves in various parts of the body. Dr. Hosack records some instances of a similar character and concludes his observations with the following remarks.

"* Every case which has come within my knowledge, where the practice of immersing the limb in cold water at the invasion of gout has been habitually pursued has ended in apoplexy or palsy."

"From these facts it appears that neuralgia is not confined to the nerves of the face, as most physicians have supposed; but that it is frequently connected with the general condition of the system, and that we are not in all instances to rely upon the division of the nerve affected, for the cure, but to direct our remedies according to the temperament of the patient, the peculiar condition of the body, and vice of the habit from whence the disease may have originated. Dr. J. Fothergill in some instances traced it to a cancerous or vitiated habit of body, and in three cases removed the disease by the use of hemlock; with the same pathological views, the bella donna has been prescribed in this disease, and according to the report of the writer, with decidedly beneficial effects, and in cases too that had resisted the means ordinarily advised.* Some French physicians have cured it by mercury,† believing that in some cases it may have arisen from a syphilitic taint; others, treating it as rheumatism, have employed calomel and opium with success.‡ As the complaint for the most part occurs late in life, and in females most generally after the natural cessation of the menses, or, if in early life, from the suppression of that evacuation, may it not also derive its origin from the state of the blood-vessels, an arthritic habit, or that condition of body which induces rheumatism,§ especially in persons of the nervous temperament, who are generally the subjects of neuralgia? In cases of this nature, the lancet, warm bathing, alterative drinks, and the vol. tinct. guiac, with other means calculated to operate upon the whole system, may, according to the peculiar circumstances of the case, take the place of the knife, now resorted to for the division of the nerve affected, and which, in some instances, disappoints the patient and practitioner.

"The opinion expressed by the late Dr. Parry, with regard to the proximate cause of this disease, and the plan of treatment thence deduced, is not at variance with the foregoing views. Dr. Parry attributes this painful affection to an increased vascularity, in other words, an inflammatory affection of the neurilema, or membranous envelope of the nerves affected; and places his chief dependence for its removal upon general and local blood-letting.‖

"* See observations on the use of belladonna in painful disorders of the head and face, by Mr. John Bailey.

"† Recueil periodique de Medicine, Paris, 1702, tom. IV. See also Edin. Med. and Surg. Journal, vol. III. p. 273.

"‡ Edin. Med. and Surg. Journ. vol. IV. p. 306. New Med. and Phys. Journal, vol. VII.

"§ See two cases thus induced, related by Dr. Pearson, Edin. Med. and Surg. Journal, vol. III. p. 272.

"‖ Elements of Pathology and Therapeutics."

"But as in rheumatism, a morbid sensibility frequently remains in the part affected, and that in proportion to the debility induced, and thereby the pain is continued, and indeed sometimes augmented; so in like manner the second stage of this disease, when the remote causes have been removed, the pain and spasmodic affections are continued, until the tone of the system is restored, by which the irritability of the part affected is counteracted. Tonics in such cases doubtless are called for, and it is probable in this chronic state of the disease that the carbonate of iron has been successfully administered by Mr. Hutchinson,* and that the arsenical solution has been found useful by others.†

"The views taken of this disease by Dr. Armstrong,‡ tracing it to a congestion, or an increased action in the vessels of the brain, and the successful use of depletion by the lancet, local blood-letting and cathartics, are no less in accordance with the principles I have endeavoured to establish, that neuralgia is not a local affection, or disease of a particular nerve, and to be removed by the division of such nerve, but a disease dependent upon the whole system, and only to be counteracted by remedies addressed to the peculiar state or condition of the constitution." Vol. II. 252.

ESSAY XVIII. *Remarks on Sternalgia, or Angina Pectoris.* Concerning this interesting disease little was known until the time of the late Dr. Heberden, who described it in 1768, and gave to it the name of angina pectoris. Since his day various theories have been advanced concerning it; of these the two most popular at present we believe are those of Dr. Wall and the late Dr. Parry, the former of whom ascribes it to a rigid condition of the valves of the heart, and the latter supposes it to arise from an ossification of the coronary arteries. The views of Dr. Hosack on this subject are so interesting that we shall make no apology for the following pretty copious extract from his paper.

"Having many years since met with some cases of this disease, attended with the most alarming symptoms, in which, after the paroxysms were removed by the usual diffusible stimuli, blood-letting and other means of depletion were successfully employed, and ultimately effected a cure; in

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"* See cases of tic douloureux successfully treated by Mr. B. Hutchinson.

"† During my late tour of duty in the New-York Hospital, I have prescribed the arsenical solution with success, in two cases of this affection, which had been of long standing; in these, the disease affected the whole head analogous to hemicrania, but was not confined to a particular pair of nerves.

"‡ See Practical Illustration of Typhus and other Febrile Diseases."

1811, I ventured to communicate my distrust of the correctness of the generally received doctrines on this subject, and expressed the opinion, that angina pectoris most frequently proceeds from a plethoric state of the blood vessels; more especially from a disproportionate accumulation of blood in the heart and larger vessels.* From every thing that I have seen upon this subject since the first publication of this doctrine, whether at the bed-side, or derived from the writings of others, I am induced to persist in the belief, that such plethoric condition of the sanguiferous system, both general and local, is to be considered as having, if not an exclusive, at least a predominant agency in the production of this disease.

"In the dissections recorded by Dr. Parry, the only case in which the ossification of the coronary vessels was found, the disease was obscurely marked. In other cases again, which were more strongly designated, the ossification was wanting. In the description of a case in the Medical and Physical Journal,† and another described in the Medical Communications,‡ by Mr. H. Watson, it is expressly said, that the coronary vessels were free from disease. In a number of well-distinguished cases of the complaint, as related by Doctors Heberden, Wall, Fothergill, Morgagni, Percival, and James Johnstone, the coronary vessels were found in their natural state. Upon examining the state of the valves too after death, from other diseases, ossification has been frequently met with, yet no symptoms of angina pectoris had been observed during the disease of which the person had died. In like manner an irregular circulation and palpitation have been oftentimes met with, but without the evidences of sternalgia. Numerous cases of this nature could be cited by the writer: similar facts must certainly be familiar to every practitioner.

"In one case of this disease, a lady who had passed the period of menstruation, suffered frequent paroxysms of angina pectoris: in her last attack she died before medical aid arrived to her assistance. I examined the body after death: no ossification was found either in the valves of the heart or in the coronary vessels; I passed the probe freely through the latter. The auricles, and large vessels, particularly the vena cava at its entrance into the auricle, were of uncommon size, compared with the heart, which was smaller than usual; a considerable quantity of water was found in the pericardium, and the heart itself loaded with fat.

"In many instances again I have seen this disease, with all its peculiarities and symptoms denoting danger, entirely relieved by the means calculated to diminish the volume of circulating fluids, at the same time by other means,

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"* See American Med. and Phil. Register, vol. II. p. 365, 6.

"† Vol. XVI. p. 487; see also New-England Journal of Medicine and Surgery, vol. I.

"‡ Vol. I. p. 234."

preserving an active current through the various channels of excretion. I also observe that the persons so relieved, have afterwards by temperance and exercise remained in the perfect enjoyment of health. Many of them are still living, and by their exemption from any return of this disease, manifestly show that no such permanent derangement in the organization of the heart, as described by Dr. Wall, or by Dr. Parry, could have existed." Vol. II. p. 289.

Vol. II. Essay XXIV. *Observations on the Weather, and Diseases of the City of New-York, from January 1st 1810 to January 1st 1814.*

This paper occupies no less than one hundred and thirty pages, and must be considered as one of the most interesting and instructive parts of the work before us. It is enriched with practical observations deduced from long and extensive experience, and as such will no doubt recommend itself to general consideration.

But it is time to bring our remarks to a close. We have noticed some of the more important articles contained in the present work without attempting any thing like a general survey of the whole, which from the extent and variety of matter which it embraces, it was literally impossible to accomplish in the compass of an ordinary review. In conclusion we have no doubt that the work will receive that respectful notice from the medical public, in this country particularly, to which the high character of the author, no less than the valuable matter which it contains, so justly entitle it.

Medical and Philosophical Intelligence.

DOMESTIC.

Trial and conviction for murder, and pardon on the plea of Insanity.

A CASE of some interest in Medical Jurisprudence has occurred during the last year in this state, the particulars of which we shall briefly detail. They are furnished by a correspondent whose investigations in forensic medicine are neither few nor unimportant.

"In January 1823, William Kirby, a resident of the county of St Lawrence, was indicted for the murder of John Hughes, (a son of his wife, by a former marriage) aged four years, and also of his daughter Frances Kirby, aged two years. At the court of oyer and terminer, held in September 1823, the prisoner was put on his defence, and he pleaded not guilty. It was proved on the trial, (and admitted by the prisoner,) that on the 22d of January 1823, he had thrown the two children into the Oswegatchie, from a bridge leading across that river. The fact, indeed, of the murder was fully and entirely admitted by the prisoner. The justification of this homicide was *insanity* at the time he committed the act.

To support this defence, one witness, residing at Prescott (Upper Canada) stated, that the prisoner came to his house about a year before the murder was perpetrated, and worked with him about ten days. During the time that he was at the house of this witness, he said publicly that he was a deserter from the British army, and that he would give himself up at the fort; that he went to the fort, returned in a day or two, and said he was acquitted. Another witness (Henry Hamilton) testified, that he knew the prisoner, and had boarded and worked with him: that the prisoner often complained of a *pain in the head*, and could not eat his meals. He thought him a singular man: he often found him sitting alone in the fields, and he would often stop at work, and appear to forget himself, but *it never occurred to the witness that he was crazy.*

Christian Hill saw the prisoner about a year before the trial, and for three months after that time. Kirby boarded for a month or two at the house of the witness, and when his wife and children arrived he appeared much pleased and very affectionate. They had not been with him more than a week or two when the children were drowned. Previous to the arrival of his family, he expressed great anxiety about them, and said he should never see them unless he *saw them soon.* On an evening, while boarding at witness's house and during the autumn, Kirby said he was *going to drown*

himself. This produced no alarm; but he shortly after left the house without his hat and coat, although the weather was cold, and was absent until near morning. He mentioned, that if he could have succeeded, while out, in procuring some rum, he would have been in eternity.

The Rev. James McAuley testified that he had visited the prisoner three or four times, in prison: the prisoner's mind appeared unsettled, and he had sometimes thought broken and scattered. Dr. Joseph W. Smith was requested by the civil authorities, to assist at the examination of the prisoner, to ascertain whether he was insane or not. "He asked the prisoner several questions with that view, but discovered no indications of insanity. The prisoner, however, might be insane and the witness unable to discover it." C. D. Raymond, sheriff of St. Lawrence county, said, that the prisoner had been in his custody since the winter preceding, and that he never saw any thing indicative of insanity.

The examination and confession of the prisoner was also produced. In it, he says "that he had it in contemplation to destroy the children for about a week past; that the children had given him no offence; that he did it because he thought it better for the children to go into eternity than to stay in this world; that he intended to have destroyed himself with the children, but the thought struck him at the moment that suspicions might rest on his wife, and he determined to stay in order to shield her from any imputations; that he had been in the United States about five years, and for the last six months had been seeking to destroy himself; that he believed he should have been happy, if he had drowned himself with the children, and that he could have supported the children comfortably."

The Jury were particularly charged on the point of insanity by the presiding judge, but after being out about fifteen minutes, they brought in a verdict of *guilty.*

A representation was subsequently made to the Governor, by the Judge, and the district attorney who prosecuted on the part of the people, concerning the unfortunate convict. This, together with an examination of the testimony, led that officer to the belief that Kirby was insane when he committed the alleged murder, and it was therefore determined to exercise the power of pardon, which, by the constitution, is vested in the Executive of the state. "Believing, however, that it would be dangerous to the community to suffer the convict to go at large," the governor only postponed the period of execution, for the purpose of obtaining a law, by means of which he could annex to the pardon the condition of perpetual imprisonment.

On stating the above circumstances to the legislature, the consideration of them was referred to a committee of the senate, and it was from a report made by that body that the facts related above are obtained. It will be perceived that it remained with the legislature to decide on their value as proofs of alienation of mind, and it is almost needless to add, that in a case of this nature a leaning to the side of mercy was readily exhibited. A law

was passed complying with the request of the governor, and enabling the keeper of the state prison to receive Kirby into his custody.

As all the facts on which the above decision was made, are contained in the abstract now given, it will certainly not be deemed improper to advert to the leading features of the case, and in the first instance we may remark, that the proofs drawn from the conversation or actions of Kirby are very uncertain and inconclusive indications of insanity. The most intelligent witnesses, the clergyman and sheriff observed nothing of this state of mind, while a medical man who examined the prisoner expressly with a knowledge of the charged insanity is free to declare, *that he discovered no proofs of it.* We do not hazard therefore much in asserting that the plea of insanity was unsupported.

There remains however an important consideration, which, although not expressly mentioned, has doubtless exercised considerable weight in the decision of the subject, and that is, *that the act*, a father murdering his children, *is of itself a strong proof of the presence of insanity.* In canvassing such melancholy cases as the present, the mind naturally inquires whether any proof of malice be present, and it has happened that maniacs have suffered as murderers because the chain of testimony was apparently clear with respect to the real or supposed hatred entertained by them against their victims. Here however no such suspicion can be indulged: indeed invention is perfectly at fault to assign a cause, and we readily and willingly refer to a disordered mind what would else be a crime of the deepest and most terrible atrocity. Fanaticism, which is constantly destroying its dearest earthly objects, is thus explained, and indeed can alone be explained with any show of probability in this way. But it must also be recollected, that crimes as atrocious as any that the records of insanity can present have been committed by those whose sanity was undoubted; it therefore becomes a question of the deepest interest as to the indications which are to point out these different states of mind. We know of none except a diligent, enlightened examination of the conversations and actions of the accused individual; a comparison of these with the history of his previous life and a cautious inquiry as to the motives for the crime. Believing that these in the present case will not warrant a belief in the insanity of the individual convicted, we are still ready to bestow our approbation on the humane policy which while it prevents him from doing further injury to the public, enables him to repent in solitude over the commission of his detestable offence."

Case of Anthrax, communicated to the editors by D. C. Freeman, M. D. *of Windsor, North Carolina.*

This case occurred in my practice in a neighbouring town, (Washington.) Mr. ———, aged 63 years, a native of England, of a sanguine temperament, leading an inactive life, and intemperate in the use of spiritous

liquors, was the subject of this disease. He had for several years laboured under a hemiplegia: it had made its appearance, he informed me, in the manner of a common bile, which he supposed it was, but from the intolerable itching and burning pain attendant on it, and from its increasing rapidly in size, he was induced to send for me in August 1820, on the sixth or seventh day of the disease: on examination I found a large tumour about six inches in circumference covering the ligamentum nuchæ and involving the muscles of the neck, so as to make it extremely painful to move the head. The tumour had now assumed the honeycomb appearance so characteristic of this disease, the cells being filled with a thin, acrid matter. His pulse was full, strong, and frequent; tongue covered with a white fur, and appetite bad, or rather a loathing of food. I took ten ounces of blood from him and gave him a cathartic of sulph. sodæ. As local applications I made use of bread and milk poultices renewed four times a day, previously cleaning the part with warm soap suds. These applications were continued for several days, when the disease had increased to nearly double the former size, about eleven inches in circumference, and it began to assume a gangrenous appearance in the centre. The disease now appeared very formidable, and was spreading to an alarming extent. I found the treatment had been inefficient, I accordingly commenced the stimulant plan. The part was washed with soap suds made more stimulating by the addition of rum, three times a day, and dressed with camphorated spts. of peruv. bark; the spts. vin. rect. being used as the solvent of the camphor. A pill of 2 grs. opium was given every night. From the commencement of this plan of treatment the ulcer ceased to spread and commenced sloughing, so that in a week from this time the slough had entirely separated and the ulcer discharged laudable pus. The camph. spts. and bark were now laid aside, and it was dressed with the ung. basil. flav.

His appetite remained very much impaired during the whole course of the disease. He entirely recovered from this attack, but died a year after of apoplexy after eating a hearty dinner.

The peculiarity of this case was that the system laboured under no typhoid symptoms, the pulse fell after the bleeding to its natural strength, and the tongue remained clean after the white fur disappeared, so that no internal medicines were made use of except one or two doses of salts and an opium pill at night.

The Medical Review and Analectic Journal.—The first number of a new periodical work, to be published quarterly, has just appeared, conducted by *John Eberle*, M. D. &c. and *George McClelland*, M. D. &c. Philadelphia.

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Case of Anthrax, communicated to the editors by D. C. Freeman, M. D. *of Windsor, North Carolina.*

This case occurred in my practice in a neighbouring town, (Washington.) Mr. ———, aged 63 years, a native of England, of a sanguine temperament, leading an inactive life, and intemperate in the use of spiritous

liquors, was the subject of this disease. He had for several years laboured under a hemiplegia: it had made its appearance, he informed me, in the manner of a common bile, which he supposed it was, but from the intolerable itching and burning pain attendant on it, and from its increasing rapidly in size, he was induced to send for me in August 1820, on the sixth or seventh day of the disease: on examination I found a large tumour about six inches in circumference covering the ligamentum nuchæ and involving the muscles of the neck, so as to make it extremely painful to move the head. The tumour had now assumed the honeycomb appearance so characteristic of this disease, the cells being filled with a thin, acrid matter. His pulse was full, strong, and frequent; tongue covered with a white fur, and appetite bad, or rather a loathing of food. I took ten ounces of blood from him and gave him a cathartic of sulph. sodæ. As local applications I made use of bread and milk poultices renewed four times a day, previously cleaning the part with warm soap suds. These applications were continued for several days, when the disease had increased to nearly double the former size, about eleven inches in circumference, and it began to assume a gangrenous appearance in the centre. The disease now appeared very formidable, and was spreading to an alarming extent. I found the treatment had been inefficient, I accordingly commenced the stimulant plan. The part was washed with soap suds made more stimulating by the addition of rum, three times a day, and dressed with camphorated spts. of peruv. bark; the spts. vin. rect. being used as the solvent of the camphor. A pill of 2 grs. opium was given every night. From the commencement of this plan of treatment the ulcer ceased to spread and commenced sloughing, so that in a week from this time the slough had entirely separated and the ulcer discharged laudable pus. The camph. spts. and bark were now laid aside, and it was dressed with the ung. basil. flav.

His appetite remained very much impaired during the whole course of the disease. He entirely recovered from this attack, but died a year after of apoplexy after eating a hearty dinner.

The peculiarity of this case was that the system laboured under no typhoid symptoms, the pulse fell after the bleeding to its natural strength, and the tongue remained clean after the white fur disappeared, so that no internal medicines were made use of except one or two doses of salts and an opium pill at night.

The Medical Review and Analectic Journal.—The first number of a new periodical work, to be published quarterly, has just appeared, conducted by *John Eberle*, M. D. &c. and *George McClelland*, M. D. &c. Philadelphia.

Results of Meteorological Observations for 1823, *at Albany.*
By T. Romeyn Beck, M. D.

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Mean temperature at 7 A. M.	42.04
Mean temperature at 2 P. M.	53.46
Mean temperature at 9 P. M.	46.43
Mean of all the observations	47.31
Greatest height of the thermometer	94.00
Lowest height of - - - do.	—6.00
Greatest annual range	100.00
Greatest monthly range	55.00
Greatest daily range	30.00

Weather.

Clear days	number 149
Cloudy days	do. 155
Variable days	do. 61
Snow; number of days on which it fell	35
Rain; number of days on which it fell	67
Quantity of rain during the year, (January, February, March, and December, excepted,)	inches 20.21

Winds.

North,	number of days 39	South West,	No. of days 11
North East,	do. 9	West,	do. 77
East,	do. 2	North West,	do. 76
South East,	do. 91		
South,	do. 60	Prevailing wind,	*South East.*

University of the State of New-York.—The annual course of lectures in the College of Physicians and Surgeons in the city of New-York, will commence on the first Monday of November, 1824.

Dr. Post, on Anatomy and Physiology.

Dr. Hosack, on the Theory and Practice of Physic and Clinical Medicine.

Dr. Macneven, on Chemistry.

Dr. Mitchill, on Materia Medica and Botany.

Dr. Mott, on Surgery.

Dr. Francis, on Obstetrics and the Diseases of Women and Children.

Omission.—In the list of graduates of 1824, in the College of Physicians and Surgeons of this city, by accident we omitted

William Walton Verplanck, A. B. of New-York, on Antimony.

FOREIGN.

Emetine of the Violet or Violine.—At a late sitting of the *Académie Royale de Médicine*, Section of Pharmacy, M. Boullay read a *Mémoire* on the analysis of the violet, *viola odorata*, from which it appears that the violet contains an active, alkaline, bitter, and acrid principle, similar to the emetine of ipecacuanha, which the author proposes to distinguish by the names of *emetine of the violet, indigenous emetine* or *violine.* This substance according to M. Orfila, possesses very powerfully poisonous qualities.

It is somewhat remarkable that the active and emetic principle of the violet resides equally in the root, the leaves, the flowers, and even in the seeds. In each of these parts it is found associated with different immediate principles, which modify its action on the animal economy.

The active principle of the violet was at first obtained in a state similar to the emetine of the ipecacuanha, possessing similar properties; but with this difference, that it was united to the malic acid, instead of the gallic acid, which is found in the ipecacuanha.—*Journal de Pharmacie, Janvier, 1824.—Lon. Med. Repos.*

Tests for Arsenic. (Annals of Philosophy, Jan. and Feb. 1824.)—The following improvements in the mode of using the tests for this poison have been suggested by Mr. R. Phillips of London, and Dr. Traill of Liverpool. 1. For executing the process of reduction and sublimation, almost every work on chemistry and on medical jurisprudence advises the analyst to expose the mixture of the black flux and oxide, for ten or fifteen minutes, to the heat of a charcoal chaffer, in a coated tube, a quarter of an inch in diameter, and eight or ten inches long. Both Mr. Phillips and Dr. Traill very judiciously condemn this process, as clumsy and unnecessarily complex. Dr. Traill proposes to subject the mixture to the heat of a blowpipe lamp, in a small and naked tube, and says he has thus detected a tenth part of a grain. This mode of procedure we have been always in the practice of following, and have experienced no difficulty in procuring an obvious metallic crust from a sixteenth part of a grain. Mr. Phillips, however, advises the substitution of the ordinary flame of a spirit-lamp, which answers admirably, for it does not disperse the sublimed metal so much as the blowpipe. As tubes are not always at hand, he recommends the use of a long ten drachm phial, and describes minutely the mode of employing it. He ought to remember, however, that a tube is not always at hand only where the experimenter is not a chemist, and that the expedient recommended will succeed, like all other shifts, only in the hands of a practised person. With the ten drachm phial, the experiment will often fail, if the quantity be minute; for the sublimate will be diffused too much to be distinctly recognised. 2. Mr. Phillips has given a simple process for preparing a solution of sulphuretted hydrogen. Authors seem universally to pre-

fer the solution of the gas, but for what reason we know not. We have certainly found a stream of the gas itself to be quite as delicate; and it is of course much more easily applied, as the solution cannot be kept for occasional use. 3. He has suggested a very neat improvement on the cuprous test. Add the solution of potass to that ofthe sulphate of copper; a blue precipitate is thrown down. If an arsenical solution be then added also, the precipitate becomes grass-green or apple-green. The change, we find, takes place slowly, unless the quantity of arsenic be large. 4. When the arsenic is dissolved in coloured fluids it is difficult or impossible to obtain the true precipitates with the liquid tests. To remove the colour, Professor Orfila recommends the previous use of chlorine in solution. This, however, has the disadvantage of rendering the silver test difficult of application, because the chlorine throws down the silver in abundance; and, besides, we have observed, that, although the colour was destroyed in the solution, it often partly reappears in the precipitate, so as to give it a dingy hue. Mr. Phillips proposes to destroy the colour with ivory-black. "On considering this part of the subject, it appeared to me that animal charcoal (ivory-black) might be advantageously employed for the purpose of destroying the coloured matter. I therefore mixed some of it with a coloured solution of arsenious acid, namely, the *Liquor Arsenicalis* of the London Pharmacopœia. I found that the colouring matter was so completely destroyed in a few minutes, that the test of nitrate of silver, or any other, might be readily applied. I repeated this experiment with port wine, gravy-soup, and a strong decoction of onions, and succeeded, in these cases, in procuring a solution sufficiently colourless for the application of the most delicate tests. It might be supposed, that the phosphoric acid, which the animal charcoal contains, might have some share in the production of the yellow precipitate with silver. I found, however, that water or wine, which was digected on the animal charcoal, produced no effect with the nitrate of silver, excepting a slight precipitate of chloride; and to prevent this, the ivory-black should be washed on a filter with boiling distilled water, till the fluid running through ceases to be affected by nitrate of silver. If, however, the ivory-black be of good quality, this precaution is unnecessary. *Edin. Med. Jour.*

Convulsions, caused by Worms, cured by injecting Tartar Emetic into the Veins.—Dr. Meplain, of Donjon, in the department of the Allier, is the author of this interesting case. This gentleman was called upon to visit a girl, twenty-two years of age, of a lymphatic temperament, short and fat, who had suffered, from her infancy, from attacks of worms, but was in other respects healthy. For upwards of a fortnight previously, her appetite had been voracious; yet, notwithstanding she was always hungry, the sight and smell of food disgusted her, and she really ate but little; her nights were disturbed by frightful dreams; in the morning she complained

that her mouth was full of a mawkish saliva; she had frequent inclination to vomit. At the termination of a journey, in which she had suffered a good deal from cold and damp, she was seized in the evening with a violent attack of fever, with intense head-ache and eructations, wandering pains in the limbs, and great restlessness. The night passed badly, with violent cramps in the legs, low delirium, and grinding of the teeth. The next day, hysterical symptoms, frequent efforts to vomit, convulsions, and continued agitation. In the night the patient lost all consciousness; the limbs became stiff. Dr. Meplain found his patient on the 15th instant, in the following condition:—She was lying on her back, in a state of complete immobility; the eyelids raised, the eyes fixed, the pupils contracted; the head completely bent backwards; the jaws forcibly held together, so that they could not be opened by any efforts; the limbs in a state of tetanic rigidity; pulse scarcely perceptible; the skin cold; abdomen soft; and the urine (the last passed on the preceding day,) white and milky. Dr. Meplain, from all the previous circumstances, conceived these symptoms to be produced by the presence of worms; being taught, he says, by numerous dissections, that, in these cases, the coming on of convulsive symptoms indicates that the worms have passed into the stomach, and seek an exit by the œsophagus. He therefore attempted, by various means, which we need not detail, for the space of six hours, to bring on the action of vomiting; but without success. He then determined, considering the very critical state of the patient, to attempt the injection of an emetic into the veins. Dr. M. therefore, laid bare the median vein of the left arm, which having separated from the cellular tissue, and having passed a ligature underneath, (interposing a piece of pasteboard between it and the vein,) and drawn it out to the level of the integuments, he pushed the blood contained above the ligature upwards with his fore-finger, and then made a longitudinal incision of four or five lines in the vein, into the cavity of which he placed the canula of an ordinary trocar; this being done, he injected, by means of a hydrocele syringe, six ounces of whey, in which were dissolved four grains of tartar emetic. When this quantity was taken into the vein, the ligature was cut, the vein suffered to fall into its situation at the bottom of the wound, which was brought together and bound up, as is usual after a common bleeding.

The patient gave no sign of sensibility during the operation, which was finished at eleven minutes after two; at twenty-eight minutes after two the eyes and the lower lip began to move. These details are continued, but at too great a length to permit us to follow them verbatim: suffice it to say, that at forty-two minutes past two vomiting took place, and eight lumbrici, rolled up in a ball, were ejected; they were all living. The amendment of the condition of the patient was striking: the rigidity of the limbs had ceased; she could swallow, but could not speak; the pulse was stronger, but intermitted; and she appeared to be fainting. At fifty-six

minutes after two, she vomited again two lumbrici of a larger size; after which she began to articulate, complaining of a sense of heat in her chest, of a violent head-ache, and a sense of uneasiness, which she could not describe. From that moment the condition of the patient presented nothing remarkable. She vomited several times afterwards, bringing up, together with a prodigious quantity of bile, five more lumbrici. For three days after, the patient suffered much general disturbance of the system, head-ache, thirst, &c.; but the menses appeared on the 18th, and on the 20th she was quite recovered.—(*Jour. Comp. des Sciences Med.* Fevrier.)—*Lon. Med. Jour.*

Perforation of the Stomach, recognised during Life.—J. B. Beneux, aged fifty-seven, was admitted at La Charite, in December 1823, having at the pit of the stomach an indolent indistinct tumor, which appeared to have its site in the left lobe of the liver. According to the account of the patient, it had been present about twelve months, and had succeeded to a violent blow on the part. No bad effect had been produced on the health of the subject, whose appetite was good, and who had neither fever nor vomiting; he was in moderate condition, and without any appearance of emaciation, while the expression of the countenance, and general aspect, conveyed no idea of any chronic disease. He remained in this state nearly a month, and M. Laennec began to doubt the existence of the tumor, which at times was very indistinct, and suspected that M. Beneux only wished to take up his quarters in the hospital for the winter. In the beginning of January, however, he began to experience nausea and vomiting: these symptoms at first came on only in the morning, and the egesta consisted of stringy mucus, without smell. Soon afterwards, the aliments were vomited a short time after they had been received into the stomach; and from this period the patient began to lose flesh, the skin at the same time becoming sallow. The tumor remained without perceptible change, except that some pain was now excited by strong pressure. M. Laennec now suspected scirrhus of the stomach. On the 15th of January, the matters vomited began to assume a brown appearance, and soon became exactly like coffee-grounds. On the 19th, the patient was seized all at once with acute pain in the abdomen, which came on immediately after swallowing some soup. At ten in the morning, when M. Laennec saw him, the abdomen was extremely painful on pressure, and sounding externally (*resonnant exterieurement*) on very gentle percussion; the features pinched; the pulse contracted, very small, and very weak. Judging from these symptoms, M. Laennec made the following remark in the report: "Ventriculus hodie ruptus est in loco scirrhi, et jam peritonitis adest et tympanitis abdominalis." In explaining afterwards the reasons for this diagnosis, he founded it principally upon the sudden appearance of peritoneal tympanitis, which he recognised by a sensation analogous to that which a sheet of fine parchment, placed within the cavity of the abdomen, might have produced, and which he experienced

in pressing the anterior part of the belly, or striking it very gently. As to the rest, this sensation was fugacious, and scarcely any of the pupils could discern it distinctly. Several leeches were applied to the left side, and the patient put on rigid diet. Some relief was given by these means, which were repeated next day; but the patient gradually sunk, and died on the evening of the 24th, having become inconceivably emaciated during the last few days. The appetite, however, had returned, and some soup, which was allowed him, neither increased the pain nor vomiting.

Examination of the Body.—The abdomen, on being struck, emitted the same lymphatic sound which had been perceptible during life. On cutting through the integuments, a considerable quantity of air was evacuated, which had little smell, and evidently came from the cavity of the peritoneum. This cavity contained, besides, about two pints of fluid, having a yellowish-brown colour, with numerous irregular flocculi. The liver was considerably diseased; but the principal interest was, of course, attached to the state of the stomach. On its anterior surface, it presented the appearance of furrows, converging towards the centre of the lesser curvature; being raised with caution an oval-shaped ulceration was discovered on the posterior surface, and in the centre of this was a small perforation, through which the contents of the stomach had escaped. Being cut open along the great curvature, it presented internally a much more extensive ulceration, round which the coats of the viscus were considerably thickened and indurated, with a greyish semi-transparent matter connected with them. These appearances diminished in proportion as the distance from the ulceration increased, and finally vanished. The pylorus was not diseased. The pancreas, which was intimately connected with the stomach, was converted into a firm, white, medullary-looking substance; its rounded end alone being in a healthy state.—(*Rev. Med.* Mars.)—*Lon. Med. Jour.*

M. Magendie's *Case of Hydrophobic Affection, Treated by Injection of Water into the Veins* *.—The following case, which has been much talked about, we give entire and without comment.

"About noon on the 15th of October, I was requested by M. Caillard, resident physician at the Hotel-Dieu, to come immediately to that Hospital to give my opinion relative to a man in the last stage of Hydrophobia. I reached it about one. Several students whom I met, told me that if I wished to see the patient alive, I had not a moment to lose. The man had already been placed in a detached room; he had on a strait waistcoat, and was agitated with most furious motions: approaching the bed, I recognised all the characters of rabies: the eye threatening but not injected; exclamations; most violent efforts to liberate himself from restraint; change of

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* Journal de Physiologie, October 1823.

voice; thickened saliva; and attempts to bite objects presented to him, alternating with intervals of repose. In these moments of short duration, he understood the reasoning and consolation addressed to him, but soon relapsed into fury. The sight of liquids, or a mirror, excited extreme agitation. In the morning he had swallowed a few mouthfuls of fluids, but when I saw him, a spoonful of water poured between his lips, produced frightful convulsions of the muscle of the pharnyx, and was violently spit out over the assistants.—Noise, or merely touching his hair with the finger, excited convulsions of incredible intensity. His body was alternately bent and extended with inconceivable force. The pulse was upwards of 150 in a minute, and respiration interrupted. From this combination of symptoms, I could not fail to recognise hydrophobia, and the near approach of death.

"I asked if the man had been bitten, but found that his friends knew nothing on the subject. He had been despondent for some time, his strength not permitting him to continue his work as a baker; his sadness had increased after having received a letter from a woman he loved; a fortnight past he had sought relief in drinking for several days; the consequence was copious bleeding from the nose; a physician was called in, suspecting cerebral congestion, he ordered thirty leeches, and three bleedings from the arm. Notwithstanding this treatment, he had been seized with several attacks of fury, in which he threatened those about him, and drank with difficulty. His relations seeing him grow worse, and no longer able to restrain him, brought him in the night to the Hotel-Dieu. The patient had there been copiously bled from the foot without any diminution of the attacks, which became more forcible and more frequent.

[Here M. Magendie states that he had intended to innoculate a dog with the saliva from the patient, but that he was not able to procure a sufficient quantity.]

"The case being urgent, and bearing in mind the results of the experiments related in the first Volume of this Journal, in which I had seen the symptoms of rabies cease in dogs after the injection of tepid water into the veins, I resolved on trying this extreme measure.

"I procured a small hydrocele syringe in bad condition, and some water heated to 30° Reaumur. I exposed the patient's right arm by an incision in the strait waistcoat. I was struck by remarking several small wounds on the index finger, and another much larger placed over the second metacarpal bone, and apparently the result of a recent cauterization. The patient was unable to answer any question, and his friends not having any information on the subject, I set about exposing a superficial vein in the fore-arm, an operation rendered difficult by the constant motion of the patient. With the help, however, of five or six strong students, I passed two flat ligatures under the vessel, and made an opening in it large enough to admit the point of the syringe. It was now a quarter after one; I injected

at nine times, water heated to thirty degrees, to the amount of about two pounds. On account of the bad state of the instrument, I calculate that about a dozen bubbles of air may have entered with the water.

"At each time that I injected a syringeful, I examined the patient, but he presented nothing particular, continuing to vociferate, to talk of his inevitable death, &c.; and I only stopped because I thought I had introduced a sufficient quantity of water to produce a sensible effect. The injection was finished at forty minutes after one: I tied the vein above and below the opening. Already, an unlooked for calm began to show itself; the pulse from 150, fell to 120, was soon 100, and within twenty minutes was 80. All the urgent and violent symptoms disappeared with a promptitude which astonished the assistants; for myself at this moment I experienced the most lively satisfaction I have ever felt.

"The patient recovered the use of his senses and understanding; a calm succeeded to his fury, his eyes resumed their natural expression, the convulsive motions ceased, and strange to say, he drank a glass of fluid without any difficulty. M. Caillard caused the strait waistcoat to be removed, and the patient begged to be allowed to go down into the court in order to make water. For half an hour this request was supposed to be the result of delirium, but he repeated it so often and so pressingly, that M. Caillard consented, and was surprised to find the patient walk quietly, supported by the students, to the door. Seeing that his desire was real, he was told that it would be better to make water in a corner of the room, which he did, and in a few minutes passed about a pound of turbid, yellowish urine, so fœtid, that it was necessary to remove it immediately.

"From this time, which happened an hour and a half after the injection the patient inquired for his friends, saw them, spoke of his affairs, gained courage and confidence.

"His state was remarkable, and not like any thing known: he was without fever, his pulse not above 80; but all the motions of the system of organic life, as the contractions of the heart, respiration, speech, &c. were performed with a rapid trembling. When any muscle was touched, it was felt to be agitated with the same trembling; in short, the morbid phenomena presented by the patient were as uncommon as his position was new.

"In the evening of the 17th, he received the consolations of religion. Whether the impression thus made was too powerful, or from some other cause, hemorrhage from the intestines took place in the night; the blood was coagulated, apparently arterial, and was mixed with portions of solid fæces. This accident was followed by a little pain in the abdomen, which was relieved by fomentations and emollient injection.

"The improvement continued without interruption until the fifth day, when the patient complained of severe pains in the wrists, elbows, and knees. I at first thought them the results of his struggles during the fits; but in spite of emollients they became so violent, that it was with difficulty

he could support the weight of the bed clothes. The left knee in particular was swelled, as were the wrist and elbow of the same side. On the seventh day, fluctuation became evident, principally in the knee. Besides these accidents, clearly unconnected with the disease, and probably with the mode of treatment, another appeared. On the morning of his arrival at the Hotel-Dieu, M. Caillard had judged it necessary to have him largely bled from the foot. In consequence of his sudden movements in a state of exasperation, two lancet points had been broken in the inner side of the tibia. These foreign bodies excited violent inflammation of the foot and back part of the leg, of which the patient complained much, and every thing denoted the formation of a large abscess in these parts.

"These symptoms seriously threatened the life of the patient; nor were they the only ones; vomiting of greenish fluid occurred; the abdomen became tender when touched in the region of the cœcum, and fever appeared. Some imprudent person told the patient that he had been rabid, and that an experiment had been performed upon him: from that time his mind became affected, he despaired of recovery, and feared at every moment that it was intended to suffocate him; in short, on the eighth day all hope of recovery was lost, and he died in the early part of the ninth; his death presented nothing remarkable; he sunk in a state of imperfect delirium.

"The body was opened twenty-two hours after death, in presence of a great number of physicians and students.

Dissection.—"Our attention was first directed to that which had evidently caused the death of the patient: we found a large abscess in the back of the leg, occupying the space between the heel and the projection of the calf. We found the two lancet points still sticking in the inner side of the tibia, and surrounded by pus and the inflamed periosteum.

"We found the joints of the knee, elbow, and wrist of the left side filled with pus, and their synovial membrane highly inflamed. The cartilages, as often happens, did not participate in the affection.

"We did not expect to find any serious lesion of the intestinal canal, as no very striking symptom, connected with that part, had appeared; but the hemorrhage from the anus, and the pain which took place, indicated that it could not be altogether healthy; in fact the mucous membrane towards the termination of the small intestine, was reddened by the injection and development of its veins; this redness extended in a slighter degree as far as the jejunum. At the junction of the ileum with the cœcum were a dozen small superficial ulcerations: the largest were three lines long, and two wide; that they were recent, was proved by the corresponding mesenteric glands being but little swelled, and not changed in structure. The large intestine, pharnyx, œsophagus and stomach presented nothing worthy of notice.

"One remarkable phenemenon was the decided putridity of the blood. It was every where fluid, and had given out a large quantity of gas, which

distended the heart and great vessels, and had caused sub-peritoneal emphysema of the stomach and intestines. The lungs were healthy, though somewhat loaded at the back part; the smaller bronchial divisions were red, but the trachea was healthy.

"The nervous system presented nothing remarkable; there was an inconsiderable quantity of reddish serum at the base of the cranium, and in the vertebral canal. The veins of the brain and spinal cord were filled with red and fluid blood. The ganglia of the sympathetic nerve were in their natural state. The little wounds and the scar on the hand were examined attentively, and all present were struck by the analogy of the wounds with bites, and of the scar with the effects of recent cautery.

"It results from this history, that a disease presenting all the character of rabies, ceased on the introduction of a pint of warm water into the veins; the patient survived this introduction eight days; that it did not appear to have produced any accident; and that death was caused by a local disease, unconnected with hydrophobia and the new mode of treatment.

"The hope of curing rabies by injecting water into the veins, already resting on some experiments on animals, hence acquires additional probability. It may even be possible, as some of my learned associates at the Hotel-Dieu have suggested, that the same measure may prove useful in certain extreme cases, in which the common resources of medicine are inadequate."—*Anderson's Quarterly Journal.*

On some recent Discoveries relative to the Nervous System. By M. Magendie.—M. Magendie offers some proofs and illustrations of Mr. Charles Bell's beautiful investigations, on the distinction between the nerves subservient to sensation and motion. An individual had lost the use of his two arms for several years, but he had retained a lively sensibility in these parts. He died, and on examining his body, the posterior roots of the brachial nerves (as they issue from the spine) were perfectly sound, while the anterior roots were evidently altered, had lost their medullary substance, and were reduced to their membranous sheath. The nerves give sensibility or mobility to our organs, only because they are connected with the spinal marrow; whenever they are insulated by a wound, or any other cause, the part to which they go becomes motionless and insensible. It was, therefore, of consequence to know if the spinal marrow was not itself divided into two halves, the one destended to motion, the other to feeling. M. Magendie has discovered that the spinal marrow is formed, as it were, of two cords juxta-posited, one of which is endowed with an exquisite sensibility, while the other is, so to speak, a stranger to the property, and appears to be reserved for motion. Since it is shown by the fine experiments of Legallois, that all the other organs, without exception, derive from the spinal marrow their sensibility and mobility, we are led to the remarkable conclusion, that we must cease to seek for any one point in the whole body

where the sensibility and mobility are compounded together. Hence it seemed very probable that, in persons who lose the power of moving, while they retain their sensibility, and that reciprocally in those who lose sensibility retaining mobility, there is a disease in the one case of the motive cord of the spinal marrow, and in the other of the sensitive. A lunatic of the hospital of Charenton, had lost, for seven years, the faculty of motion in the whole body, although he retained its sensibility. He died last month. M. Royer Collard, physician to the establishment, made the spinal marrow be examined with the greatest care, and found, in fact, a very marked alteration in the whole motive portion of the spinal marrow, while the portion where sensibility resides was perfectly sound. The centre of the spinal marrow is devoid of sensibility: on touching it, no movements are excited in the body. It is on the surface of this organ, that its properties are developed under the double relation of movement and feeling. Those who think that the electric fluid circulates habitually in our nervous system, may derive from this fact a new argument in favour of their opinion; for electricity diffuses itself, as is known, on the surface of the bodies which it pervades. It is unnecessary to remark, that the facts above related should have a great influence in the treatment of different palsies. When the cerebral hemispheres of any animal are put out of condition for acting, the animal runs straight forward, with singular rapidity, as if it were pursued. We might say, that an irresistible force presses and precipitates it. If, on the other hand, the action of the cerebellum be stopped, the movements take an entirely opposite direction. The animal draws back; and it is a remarkable phenomenon to see a bird, for example, whose cerebellum has been slightly touched, for whole days make no attempt to walk, swim, or fly, unless it be backwards. It would seem, therefore, to result from these experiments, that an animal in the ordinary state of health, is placed between two forces, which make an equilibrium, of which one would push it in advance, while the other would push it backwards. Volition would have the power of disposing at its option of these two forces.

A disease of the horse, little known, was proper to verify the precision of these results. Veterinary surgeons call this disease *immobility;* and, in fact, when it is wished to make the animal seized with it, fall back, whatever effort be employed, and whatever means be taken, it stands motionless. The forward movements are, on the contrary, easy, and seem sometimes to occur even without the participation of the will. If the inference which I have drawn be exact, the disease ought to consist in a physical alteration of the cerebrum, or in some obstruction of the action of this organ. I caused to be examined, last month, two horses attacked with immobility, and the conjecture has been completely verified. In both the cerebrum was visibly altered; the cerebellum, on the contrary, was unaffected. It appears, then, to be demonstrated, that the two opposite motive forces of

the cerebrum and cerebellum exist in animals, and that, in certain cases, they may be withdrawn from the influence of the will. M. Magendie relates a case of a man somewhat similarly affected, who was cured by some grains of sulphate of quinina.—*Ann. de Chim. et de Phys.* xxiii. 429.—*Lon. Jour. of Science.*

Influence of the Eighth Pair of Nerves on Digestion. (*These soutenue a la Faculté de Médecine de Paris, par —— Vavasseur*, 1823.)—M. Vavasseur, in the course of a set of experiments, by M. M. Breschet, Mylne Edwards, and himself, on the influence of the nerves on the different functions, has had occasion to repeat the important researches of Messrs. Brodie, W. Philip, and Broughton, concerning the effects of the division of the pneumo-gastric nerves on digestion; and the experience of the French physiologists has amply confirmed, and even extended the conclusions drawn by those of London. As the results at which they have arrived are of vast importance in respect to the physiology of the nervous system and of digestion, we shall make no apology for detailing them, although they have all been some time before the public in the works of the British experimenters. 1. They first found, that when the conjoined pneumo-gastric and sympathetic nerves were simply divided in the neck of a dog seven hours after eating, the food was far less altered by digestion than in another animal fed in the same manner, and killed after the same interval, but not operated upon like the former. "The food, however, was somewhat pulpy towards the pylorus, and digestion had evidently begun, as the lacteals contained chyle." 2. They next observed, that when a portion, two inches and a half long, was removed from the conjoined nerves on each side of the neck in a dog newly fed, the alimentary matter, ten hours afterwards, was hardly altered, had a clean, very dry appearance, and was merely besmeared on its surface with a thin coating of chyme. In another dog, treated precisely in the same manner, except that the nerves were simply divided, digestion had advanced very far. 3. Magendie had imagined, that the cause of digestion being impaired or prevented by the section of the pneumo-gastric nerves in the neck, might be the injury done to the respiration by the division of the pulmonary nerves; because he found that the food underwent the usual changes, if the section of the nerves was performed lower down than the giving off of the pulmonary plexus. M. Vavasseur and his coadjutors have shown this supposition to be groundless; for the changes produced by digestion were completely prevented, by tying a double ligature at the bottom of the gullet and dividing it between. 4. Wilson Philip having observed, that the destruction of the lower part of the spinal cord impeded digestion, was led to infer that it is diminished by any cause which weakens the nervous energy. This conclusion has been satisfactorily confirmed by the Parisian experimenters, not only by the repetition of Philip's experiment, but likewise by the effects of injuries done to the brain, either through external force or by internal agents. When a portion of each

hemisphere of the brain was removed in a dog newly fed, the food in eight hours was less altered than after the simple section of the pneumo-gastric nerves. And when an animal newly fed was plunged into a state of stupor by the injection of opium into the veins, the food, though considerably changed in eight hours, was much less altered than in another animal not brought under the influence of opium. "We see then," they conclude, "that whenever the intensity of the nervous influence is diminished, digestion is sensibly retarded. Whether the intensity be lessened by destroying a part of the brain or spine, or by bringing the system under the action of stupifying drugs, or by preventing the transmission of the nervous fluid along the nerves which conduct it to the stomach, the same results are uniformly obtained." 5. The last object of their attention was the alleged power of the galvanic fluid to effect the same changes as the nervous influence does on the food in the stomach. They first experimented on the horse. In one, immediately after it had fed on oats, the nerves were divided on both sides of the neck, and a portion removed two inches and a half long. In another this was done on one side only, while the opposite nerve was simply divided, and the lower end detached from its connexions, surrounded with a plate of lead, and connected with one side of a battery of 50 plates. The other side of the battery was then connected to another plate of lead, which was placed in the cavity of the abdomen upon the stomach; and the experimenters satisfied themselves, that the galvanic stream was kept up continuously by the frequent slight contractions of the *panniculus carnosus*. The three animals were killed seven hours after they had been fed. In that which was not operated on at all, the stomach contained a grayish mucilaginous fluid, without any grains; the small intestines a yellow mucosity; the cœcum a large quantity of altered and unaltered grains. In the animal which was galvanized, the stomach contained a small quantity of fluid and some altered grains; and the rest had passed entirely into the cœcum, where the grains were partly soft and chymous, and partly collected in balls. In that whose nerves were divided, but which was not galvanized, the stomach contained a large quantity of clear, yellow liquid, and three times as many grains as in the second; and of these the greater part was unaltered, the remainder half digested; the cœcum contained merely a watery fluid and shreds of chaff, manifestly the residue of a former digestion. It is evident, that, in the last animal, none of the oats on which it had fed immediately before the operation had passed the pylorus; while the whole aliment in the unoperated animal, and at least two-thirds of it in that which was galvanized, had been transmitted into the intestines. The same experiment was repeated with similar results on the dog; and, consequently, we may now consider the statement first made by Wilson Philip, regarding the effect of galvanism in carrying on digestion, as firmly established. Of course, however, the establishment of this fact by no means establishes the inference he proposes to draw from it as to the identity of galvanic electricity with the nervous fluid.—*Edin. Med. Jour.*

On the Mortality, &c. of Paris.—M. Villermé has lately read a paper to the *Académie Royale de Médecine*, from which it would appear that, notwithstanding all the horrors of our smoky atmosphere, London enjoys a greater degree of salubrity than Paris, so much boasted of by its inhabitants for the clearness of its atmosphere. The mortality of Paris is at present about one in 32 6-20ths; in the seventeenth century it was one in 25 or 26; whilst in the fourteenth, it was as high as one in 16 or 17.

Formerly, as in London, the number of deaths considerably exceeded that of the births; but now the contrary is the case. There are more boys born dead than girls; and yet, during the three first months after birth, more boys die than girls.

The month of June presents the *maximum* of conceptions, and the *minimum* of births; in March and April the greatest number of births occur; and after these in February and January.

The poor and rich occupy in Paris the extremes of the scale of mortality. In proof of this M. Villermé places the twelfth *arrondissement* of the city, where there are the most paupers, in opposition to the first, where there are the most rich; the result of his calculation is, that it would not be far from the truth to say, that of a given number of inhabitants, fifty die in the first *arrondissement*, and one hundred in the twelfth.

The annual proportion of births in the first *arrondissement* is about one in 32, and about one in 26 in the twelfth, and yet the proportion of children under five years of age is not greater in the latter—a proof that the poor produce more children than the rich, but take less care of them.

M. Villermé passes in review, year by year, the great events, political, moral, physical, &c., which have borne upon the people of Paris; from which he draws a conclusion to which almost all writers on political economy have arrived, that whenever a people are in any way suffering, the number of deaths augment, that of births diminishes, and the mean duration of life becomes shorter. Whenever, on the contrary, the people are happy, the number of deaths diminishes, that of births augments, and the mean duration of life increases.—*Revue Médicale, Mars* 1824.—*Lond. Med. Repos.*

On the Employment of the Sulphate of Quinine in a large dose in the Intermittent Fevers of Italy. By M. Martinet.—From the observations of this gentleman, he has been led to the following conclusions:—1st. That the sulphate of quinine, administered in the quantity of from twelve to eighteen grains, in Italy, in quotidian and quartan fevers, has not stopped the paroxysm. 2d. That this medicine, on the contrary, when given to the extent of twenty or twenty-four grains, has completely succeeded. 3d. That its use, in this latter dose even, has never been followed by any unpleasant effect on the abdominal viscera, and that the patients have been thoroughly restored to health.—*Revue Médicale, Mars*, 1824.—*Ibid.*

Arrest of Salivation.—Surgeon Sommé of Antwerp asserts that mercurial salivation may be speedily arrested by the use of a gargle composed of one ounce of the superacetate of lead in two pounds of water. This gargle has the disadvantage of blackening the teeth, but is said to quickly heal those ulcerations of the mouth, which prove intractable under other means. In the ulcers of the tonsils and palate which occasionally follow mercurial courses, Mr. Sommé touches the parts with a hair pencil charged with the pure liquid of the acetate of lead.—*Archives Generales de Medecine.—Johnson's Jour.*

Successful Employment of Iodine in Scirrhus of the Uterus. By Dr. Klaproth.—A female, aged 25 years, was attacked with scrofula during her infancy, of which, however, she was freed at the period of puberty, which took place at the age of thirteen: at this period her menstruation was regular, until seventeen, when she became pregnant: the delivery was difficult, the forceps being required to accomplish it. At twenty-two years of age she miscarried, and sustained a considerable loss of blood; four months afterwards the same thing happened. From this period the catamenia ceased, and in their place leucorrhœa, at first mild, supervened. Two years afterwards, this was accompanied with pain in the groins and heat about the sexual parts. Six weeks thus passed over without any means being employed; but at the end of this time they applied to M. Klaproth. On examination, *per vaginum*, he discovered an induration at the orifice of the uterus, accompanied with sensibility and heat. He ordered the tincture of iodine internally, in the dose of eight drops three times a day, and, externally, frictions with an ointment composed of digitalis, belladonna, and hyoscyamus. After the patient had reached the dose of twenty-eight drops of the tincture, the menstruation became regular, the leucorrhœa decreased considerably, and the heat in the sexual parts gradually diminished: at this period the supervention of nervous symptoms and considerable debility rendered it necessary that the medicine should be suspended, but it was soon afterwards resumed. At the expiration of some time, numbness and cramp again indicated its suspension. The tincture was, however, prescribed for several months, but often suspended, and as often resumed; when the menstruation became regular, the induration at the orevix uteri almost wholly disappeared, the pain vanished, and the leucorrhœa vanished also.—*Revue Médicale, Mars* 1824.

NOTICE TO CORRESPONDENTS.

A Review of Smyth on Typhus Fever prepared for this number, has been excluded for want of room. It shall appear in our next.

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